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AIR FORCE

THE MAGAZINE OF AMERICAN AIRPOWER

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Bomb Forces, Not Factories

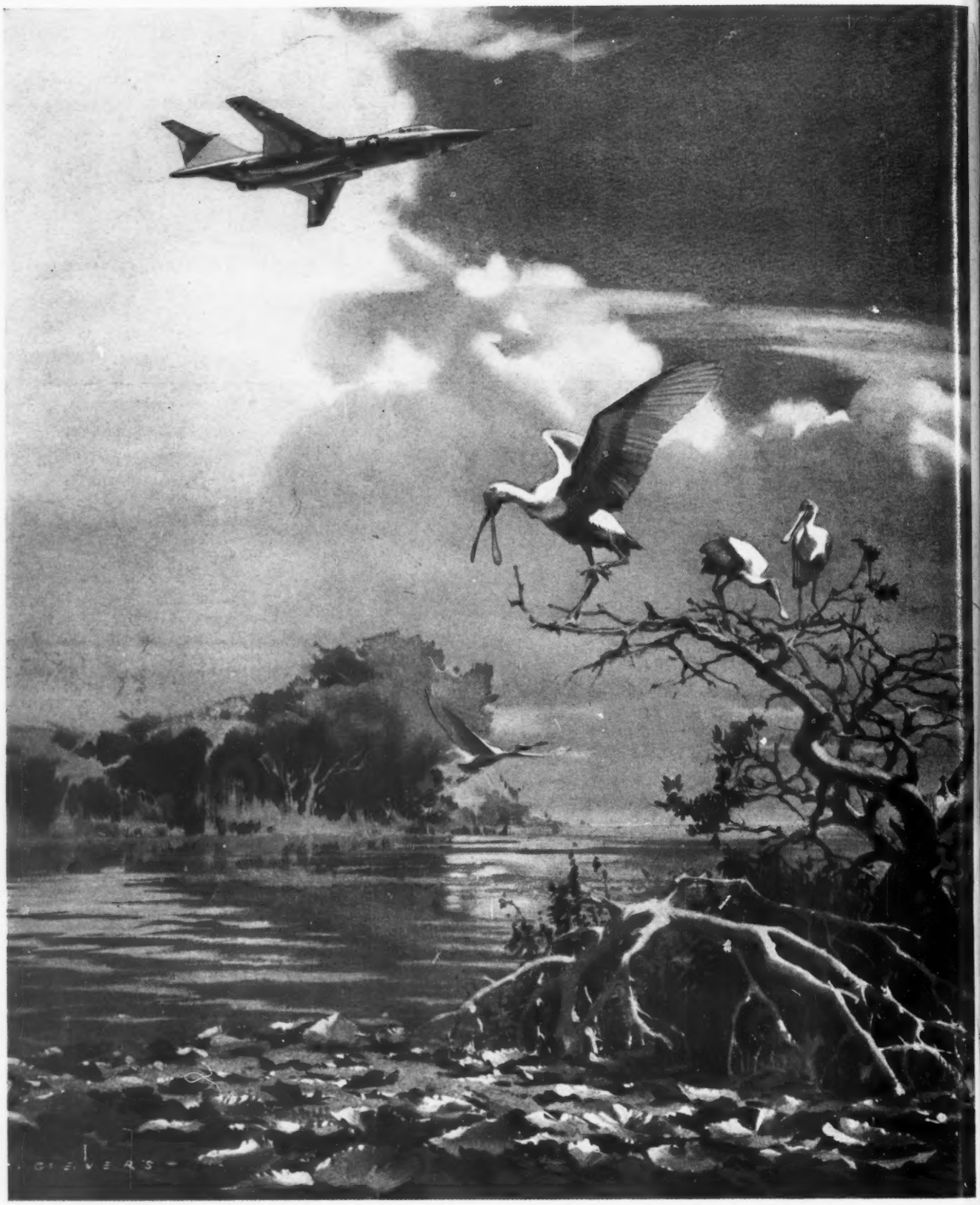
Counter-Force Strategy

How We Can Exploit America's Atomic Advantage

Sabre Dogs over Germany

Modern Air Logistics

Last Show—A Korean Episode



Hamilton Standard is a major supplier to the Air Force of lightweight pneumatic starters for such outstanding aircraft as the McDonnell F-101 Voodoo, long-range jet fighter. Years of pioneering aviation experience and unsurpassed modern facilities lie behind these jet engine starters, and other *basic lines*® of aeronautical equipment which Hamilton Standard is producing for 38 different turbine-powered aircraft.

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The Stratofortress program—full speed ahead

More than two and a half years have passed since America thrilled to the news that the world's greatest bomber—the eight-jet Boeing B-52—had made its first flight. What has happened in the meantime? Where are these global giants today and how is their production program progressing?

The fact is that exceptional progress is being made in readying the B-52 for duty. The intensive flight-test program has been most successful. B-52s are rolling off the line on schedule at Seattle, and Boeing's Wichita Division is rapidly tooling up to become a second source of production.

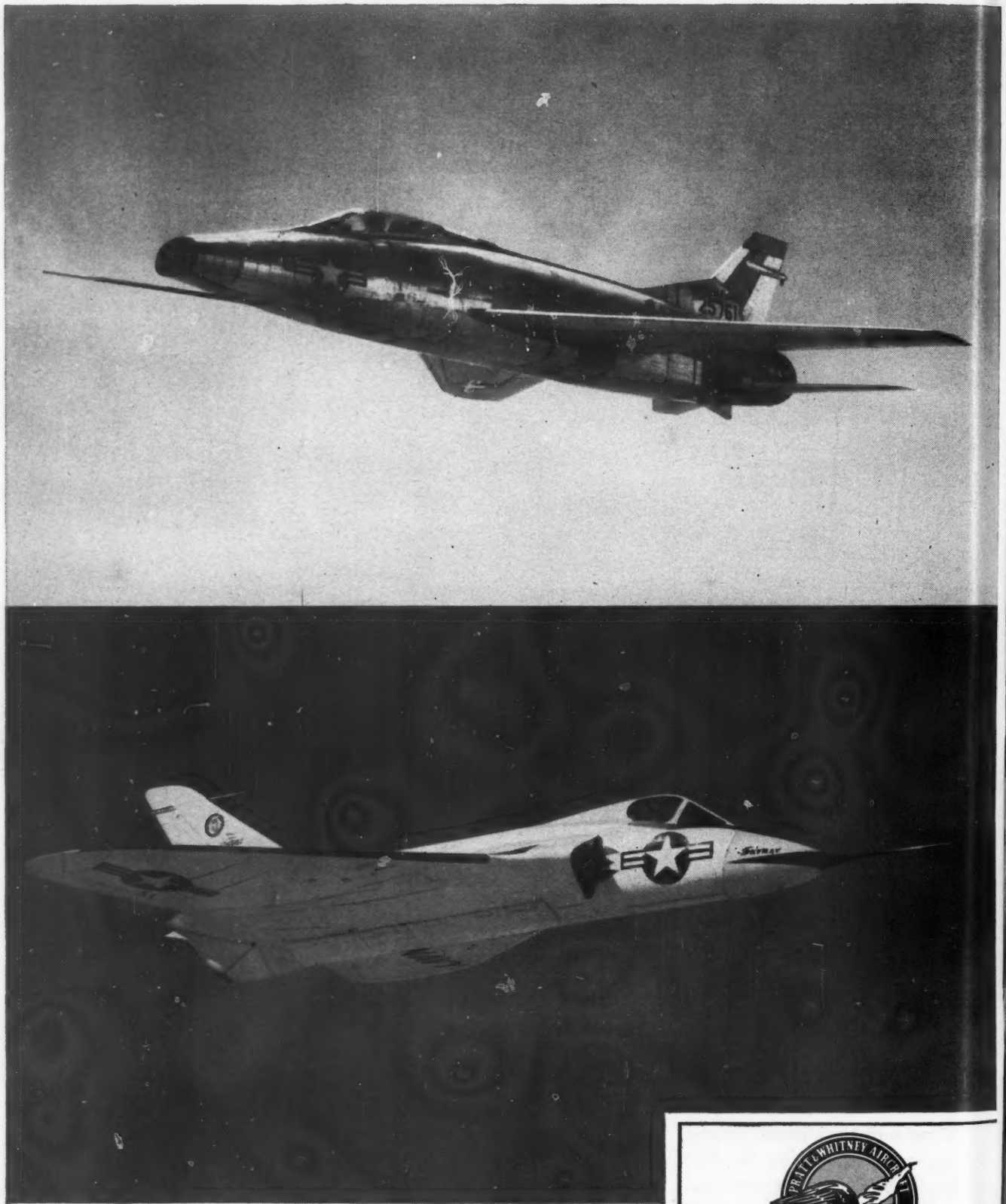
A key factor in this progress is Boeing's organizational strength. The company brings to the job immense resources of engineering man power, research facilities and manufacturing ability. Through its experience in designing and building multi-jet aircraft, unmatched anywhere in the world, Boeing has made outstanding advances in reducing the time lag between design and delivery of such a complex weapon as the B-52.

Nearly 8,000 hours of aerodynamic research in the company's own wind tunnel have saved years of costly time in getting the big bomber into the air and into production.

Today's eight-jet B-52 Stratofortress can fly faster than 600 mph, can operate above 50,000 feet and has intercontinental range. It is a powerful deterrent to aggression—a mighty weapon in the arsenal of freedom.

BOEING

AWARD-WINNING POWER BEHIND



NORTH AMERICAN'S F-100 (top) and DOUGLAS' F4D share honors in the award of the Collier Trophy in 1954. Both are supersonic. The USAF F-100 Super Sabre holds the official world's speed record of 755.149 m.p.h., set in 1953, only a few weeks after the Navy F4D Skyray had hit 752.943 m.p.h to bring the speed record back to the United States.

PRATT & WHITNEY AIRCRAFT
DEPENDABLE ENGINES

ONE OF THE DIVISIONS OF
UNITED AIRCRAFT CORPORATION

THE COLLIER TROPHY FIGHTERS

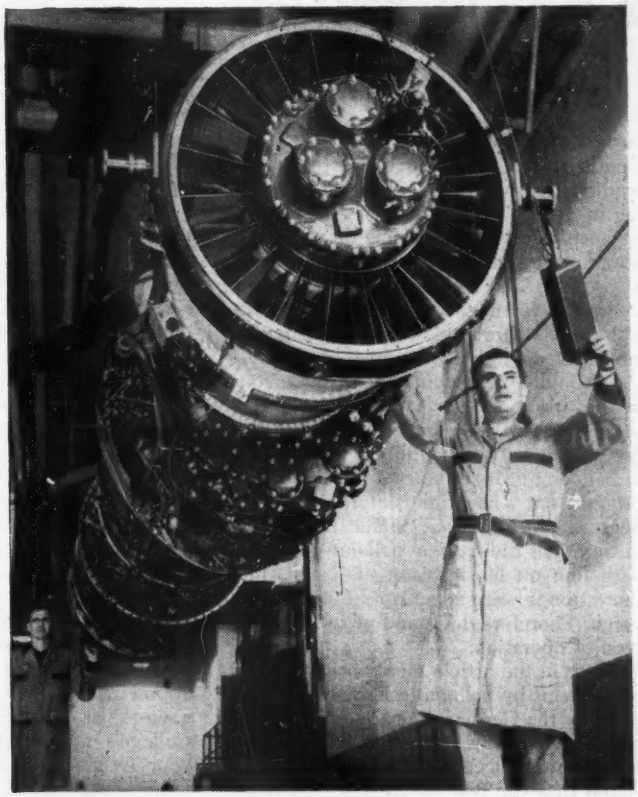
Pratt & Whitney Aircraft's J-57 engine gives supersonic speed to the F-100 and the F4D

With the 39th Collier Trophy award, America salutes two top jet fighters and the men most responsible for their design. The North American F-100 Super Sabre and the Douglas F4D Skyray are major achievements in aviation —and in U. S. Air Power.

Both Super Sabres and Skyrays are rolling from production lines to take their places in the nation's defense. And both are powered by America's highest-powered turbojet in quantity production—Pratt & Whitney Aircraft's J-57, winner of the previous Collier Trophy.

The Super Sabre and the Skyray are of a new generation of air power: a fighter generation designed from the beginning to utilize the tremendous thrust of today's high-powered engines. They are designed to fly and fight and climb supersonically . . . as their missions demand.

Pratt & Whitney Aircraft's J-57 is continuing to make its vital contributions to American air strength.



THE MIGHTY J-57—More than 10,000 pounds of thrust is provided by Pratt & Whitney Aircraft's J-57. Afterburners increase this basic thrust tremendously for short periods of operation. The engine offers outstanding fuel economy and high acceleration, vital to fighter operations, in addition to the huge thrust needed for supersonic speed. A year ago Pratt & Whitney Aircraft's J-57 was the basis for the Collier Trophy award.

Pratt & Whitney Aircraft

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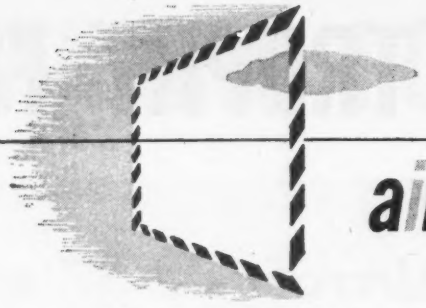

air mail

On Behalf of POWs

Gentlemen: Your message to our country's leaders on behalf of American airmen still prisoners of the Communists is more evidence of the outstanding job the Air Force Association does for the US Air Force and all Americans.

E. E. Partridge
Commander, FEAF
Tokyo, Japan

Early Ballooning

Gentlemen: I was much interested in reading Len Morgan's article on ballooning in the December issue of AIR FORCE, because a great many people do not know how long ago the first voyages in the air were made, and also because I have been interested for a good many years in the history of aeronautics, with particular emphasis on lighter-than-air.

I should like to point out a few errors in the article, however. Napoleon Bonaparte can hardly be said to have been the first to recognize the military possibilities in ballooning. Its military application was brought out some time before Napoleon became an important factor in French history. He did take a balloon company with him on his invasion of Egypt, but these troops were never used in that campaign. Therefore, he found no use for that type of operation.

Later in the article mention is made of return trips by balloon to Paris during the siege by the Germans. As a matter of fact, only two balloons made the attempt and neither was successful. In addition, it is stated that the first air combat in history took place when French and German balloons met at 10,000 feet. One authority credits this to Nadar (Felix Tournachon), but as far as I can learn, Nadar never left Paris. Besides, anyone familiar with the technique of free ballooning will recognize the unlikelihood, to say the least, of anything like this having occurred.

Mr. Morgan should not be condemned for having written these facts. They and others appear in various publications which have every appearance of authority. Unfortunately, they are examples of what Stefansson calls the "standardization of error." They have been repeated so often that they are accepted as correct.

Howard A. Scholle
Lakeville, Conn.

Gentlemen: Mr. Scholle is correct. The military application of ballooning was recognized and discussed some time before Napoleon's flying corps. But the fact remains that Napoleon was the first who could (or would) do anything about the idea. Today all nations recognize the possibilities of interplanetary travel in warfare. Future historians will, however, make note only of that nation which first develops something practical out of the idea.

Ballooning during the siege of Paris in 1870—as reported in my article—is mentioned in a number of early aviation books. My library contains a number of these rare pre-1900 works. In addition, I have had access to other material in libraries in this country and in Europe. Most of these sources agree on the fact that a "few" aerostats did manage the tricky trip back into Paris. Several credit Nadar himself with one round trip, but I was not able to verify this to my own satisfaction.

This is not to say that Mr. Scholle is wrong and that I am right for I appreciate, as he does, the difficulty of obtaining clear-cut facts and figures on the early ballooning period of aviation. Museum information is not infallible; early "authorities" sometimes wrote at length on matters about which they actually knew little. All such material must be regarded with suspicion by the student. Let me say only that, after consulting a large number of sources, I satisfied myself that the account, as given, is accurate.

Len Morgan
Dallas, Tex.

Survival Experiment

Gentlemen: Just a note to express our appreciation for the fine treatment you gave the story of Washington Missionary College's atomic survival experiment in your December issue. This has received tremendous coverage throughout the country. We hope it has been a means of stimulating interest in a very important subject.

M. Carol Hetzell
Asst. Director, Public Relations
General Conference of Seventh-Day Adventists
Washington, D. C.

Radio Free Europe

Gentlemen: I am sure you share my grave concern for maintaining and advancing the democratic ideals of the West against the inroads of Communism. In my opinion it is the major task of our time.

You can make a vital contribution to one of the most effective measures yet devised to counteract Soviet propaganda. You can encourage your readers to join the Crusade for Freedom and support Radio Free Europe.

Radio Free Europe has been doing a remarkable job of stiffening resistance to Communism behind the Iron Curtain—where it hurts the Soviets most. President Eisenhower has just said of RFE, "Through Radio Free Europe . . . men and women, who might otherwise have succumbed to the philosophy that it is good to be slaves, still keep alive the spark of freedom in their hearts."

Walter Bedell Smith, Pres.
Crusade for Freedom
New York, N. Y.

Additional Duty

Gentlemen: In the October '54 issue of AIR FORCE Magazine, on page 15, Staff Changes, you state the following:

"New Director of the Joint Air Defense Board is Maj. Gen. Frederick H. Smith, Jr. He was formerly Vice Commander of ADC."

General Smith will remain in his present position as Vice Commander, ADC, the new assignment being an additional duty.

Capt. George F. Hennrikus, Jr.
Hq, Air Defense Command
Ent AFB, Colo.

Throw-Away Tools

Gentlemen: A recent item in *The Christian Science Monitor* mentioned that the Russian air force had developed inexpensive, throw-away type, hand tools which come packed with the part to be installed.

The services continue to be burdened by an expensive system which is cumbersome: issuing, inventorying, storing, and receipting for tools of the hand type. With all the current developments in automation of production and plastics, couldn't this possibility be "looked into" by the

(Continued on page 7)

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Behind all this is an unmatched team of designers, engineers and fabricators who . . . by training and by experience . . . are specialists in fine precision instruments. They are the secret of our latest Air Data Computer that weighs as little as 12 lbs., occupies only 350 cubic inches (including power supply and amplifiers) . . . and is capable of delivering all the functions demanded by modern, high-performance aircraft.

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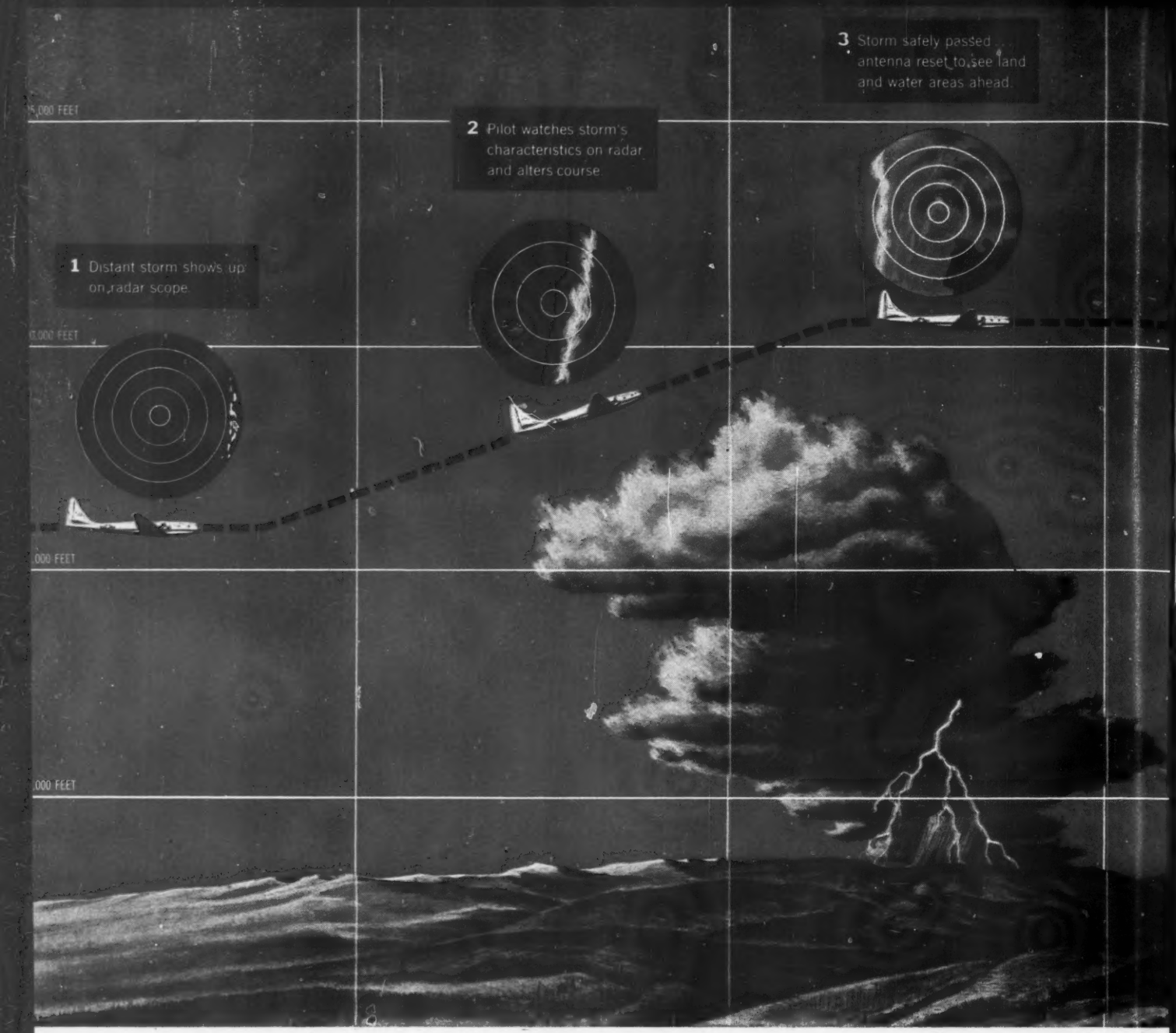
3 Storm safely passed, antenna reset to see land and water areas ahead
2 Pilot watches storm's characteristics on radar and alters course
1 Distant storm shows up on radar scope
5,000 FEET
0,000 FEET
,000 FEET
,000 FEET

NEW RADAR GIVES USAF POWERFUL EYES

Sees Storms, Obstacles up to 240 Miles Away

THE STORY BEHIND THE STORY:

Unveiled at the National Aircraft Show in September, the new Sperry APN-59 Radar developed for the Air Force made headlines like the one above from coast to coast —and for good reason.

Airmen have needed, and wanted, truly versatile radar. To make navigation more accurate . . . to aid in flying over obscure, uncharted terrain . . . to elude storms . . . to avoid collisions . . . to direct rescues regardless of visibility. But—there has been a problem: Existing radars, to perform all of these functions, have required too much space and added too much weight.

Working with the Air Research and Development Command, Sperry engineers solved the problem by producing a new airborne radar that requires less space than a passenger, weighs less than 150 pounds. And versatile? Despite its small size and weight, this new APN-59 Radar now gives airmen a selection of ranges from 3 to 240 miles—a choice of "looking" straight ahead, below or above—and permits concentrating on any particular area of importance.

Developing the APN-59 Radar brought into play many of Sperry's specialized skills. Electronics—a field in which Sperry's development of the Klystron provided the heart of today's microwave radar. Gyroscopics – to assure "picture" stability in rough, turbulent air. And, of course, sound instrumentation based on Sperry's 40 years of experience in establishing standards for the aviation industry.

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industry? Can we afford to overlook a way to squeeze the defense dollar a lot more?

Maj. William M. Middleton
Forbes AFB, Kans.

Helpful Publicity

Gentlemen: Due to your generous cooperation throughout the past year, the Air Force Reserve has received the type of publicity that helps perpetuate civil cognizance of America's Reserve forces and their vital function in regard to the solidarity and preparedness of the nation.

The far-reaching influence of magazine publication is of inestimable value to the Air Reserve program, and your contributions are greatly appreciated.

1st Lt. Myron D. Healey, AF Res.
Hq, 9335th Air Reserve Sqdn.
North Hollywood, Calif.

Commissions Available

Gentlemen: The long awaited article "That New AF Academy," December 1954 issue, was read with great interest.

A question or two, however. You say that only one-half of the Regular officer requirement will be filled from Air Force Academy graduates even when the academy is operating full board and that the remaining Regular officer input will come from "other sources" (such as AF-ROTC). Question: Will regular AF commissions still be available to USMA and Naval Academy graduates? If so, approximately how many?

Capt. Hugh M. Proffitt, Jr.
Washington, D. C.

• *Yes. When the AF Academy is operating full steam, 12½ percent of graduates from each academy may request commissions in either the Navy, Air Force, Army or Marines.—The Editors.*

Specific Requests

Gentlemen: I am typical of a lot of other ex-Air Force people in that I would still like to know what is going on in the air, perhaps mostly for nostalgic reasons. But I am not getting that information from AIR FORCE. I get more information on the latest developments from the local newspapers and *Life* Magazine. During the last war we flyboys looked forward eagerly to the next issue of AIR FORCE to find out what was going on in other parts of the service and what the latest airplanes looked like and what they were built for as well as interesting stories and accounts of other flyers and outfits.

Paul Ames
Mecca, Calif.

Gentlemen: I became a charter member of Air Force Association early in 1946 primarily for the purpose of receiving AIR FORCE Magazine, which I hoped would continue the format of its World War II years. For the past several years my interest in AIR FORCE has lagged because of increasing content emphasis on the non-flying aspects of military aviation. Personally, I am fed to the teeth with stories about the H-bomb, the political aspects of airpower, and foreign aviation news. I recognize the importance of such matters to the welfare of everyone, and one must be most unobservant not to be aware of same in view of extensive coverage of the subject by the papers, radio, and television.

I looked forward to reading AIR FORCE for the side of the story more directly associated with flying and also the lighter aspects of military aviation not found elsewhere. I refer to "Short Snorts," some of the better stories of World War II and the Korean war, as examples.

Robert C. McCormick
Cresskill, N. J.

Gentlemen: Once more I am going to ask for more pictures and information about our new aircraft. Please tell more personal stories about dangerous missions and narrow escapes. Stories like "Bail-out at 400 Feet" should be included in future issues.

Robert J. Esposito
Philadelphia, Penna.

Hope He Moves!

Gentlemen: As an avid reader of your AIR FORCE Magazine, I look forward to my neighbor to finish his latest issue so that I may borrow it. When he moves I guess you'll gain another subscriber.

A reader
Somersworth, N. H.

January Issue

Gentlemen: I was much interested in the general contents of the article and the appearance of the January issue of AIR FORCE. I was glad to read the article on page 23 concerning the military training program. I have every reason to hope that that program would not interfere with the voluntary enlistments into the Air Force. You head it "UMT." It is rather a training program, and I believe should be designated as such.

Leverett Saltonstall
United States Senator
Washington, D. C.

Gentlemen: The article in the January '55 edition of your magazine entitled "What's a Sonic Boom?" was extremely interesting. This phenomenon has puzzled many people and we have had many claims submitted to insurance companies to pay for the resultant damage. Most of the claims have been submitted under the explosion peril under the extended coverage endorsement. Many people in the insurance industry have been somewhat hesitant to accept claims on this basis because they have felt that this was not an explosion within the usual meaning of the term.

There is a certain amount of indecision within the insurance industry as to how to handle claims of this type. I believe that most of the confusion that has arisen in the past is due to the fact that this phenomenon has not been properly understood. This article by Mr. Lee Klein is highly educational and we believe it would have great value to some of the claims men in the insurance industry.

Our company is an adjustment organization handling claims for approximately 700 insurance companies. We also publish a quarterly company magazine which is widely distributed throughout the country to insurance people. If it would be possible we would appreciate permission to reprint this article in our company magazine.

E. H. Numrich
Education and Research
Western Ajustment and
Inspection Company
Chicago, Ill.

• *Reprint permission granted.*—The Editors

Gentlemen: Thank you very much for your excellent article in the January issue concerning the 89th Fighter-Bomber Wing. Your comments, and General Browne's feelings about the spirit of these Reservists in spite of the inadequate facilities afforded them, certainly are appreciated by all of us connected with the program here at Bedford. We hope to be "out of the woods" on facilities within the next twelve months though, then watch the 89th go!

I should like to mention a major accomplishment of the 89th not specifically referred to in your article. This concerns the progress made in the flying training phase. It is first necessary to point out that this unit is operating with only one runway—length 5,500 feet. During the past twelve months the Reserve pilots have been required to transition from the F-51 propeller driven aircraft to the F-80 jet type aircraft. Fifty pilots have been checked out solo and twelve pilots checked out night solo in jets at this air field. They have flown 5,800 hours during this period, of which 3,274 hours were in jets. This is an accomplishment of which we are very proud, particularly when you consider the severe limitations imposed by the length of the only available runway.

I hope you don't mind if we of the 2234th Air Reserve Flying Center "blow the horn" a little bit for what we consider "a real good bunch of Reservists" in the 89th Fighter-Bomber Wing.

Lt. Col. Philip J. Keating, USAF
Commander
Hq. 2234th Air Reserve Flying Center
Laurence G. Hanscom Field, Mass.

Gentlemen: I read with great interest the article in the January issue of AIR FORCE Magazine "Learning How to Stay Loose." That school [The Air Command and Staff College] means very much to me and of course, since I am the founder, I take great pride in it.

I believe it is basically one school whose sole philosophy is devoted to building the fighting leaders. God knows, with the onslaught of management and other big business enthusiasts, a school devoted to training and educating fighting leaders, confident in their work and dedicated to a fighting mission must shine like a lonely light in a sea of darkness.

Col. Russell V. Ritchey
Norton AFB, Calif.

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New York Airways is now furnishing helicopter service from New York to Trenton.

° ° °

General Motors' Turbo-Liner, a turboprop conversion of a Convair 240, has made more than 325 flights. Turbine power has increased the cruising speed of the 240 by fifteen percent.

° ° °

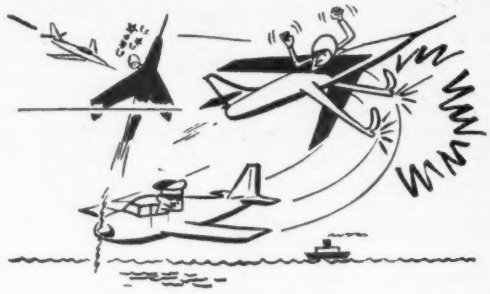
New York has become the first city in the world with nighttime helicopter passenger service. Helicopters of New York Airways are equipped with flares that can light up large areas to permit emergency dead-engine landing.

° ° °

When hurricane Hazel disrupted rail communications on the Atlantic Coast Line in Virginia, an Air Force B-25 received a distress call from the railroad through Richmond Radio. The B-25 served as a relay point to establish an impromptu communications system for the transmission of rail schedule information.

° ° °

When a student pilot in Michigan made off in a stolen Beechcraft Bonanza, jets sent up over Lake Michigan to



intercept the fugitive were unable to stay with the slower plane. It got away but was apprehended later 300 miles away—on the ground.

° ° °

An Air Force WB-29 hurricane hunter achieved two remarkable feats while trailing hurricane Edna. It located the drifting Nantucket Lightship by radar and stayed overhead until rescue aircraft arrived. And it remained in the eye of the hurricane longer than any aircraft had ever done—nine hours.

° ° °

The CAA has commissioned 230 distance-measuring equipment transmitters. When a substantial number of aircraft have installed DME airborne equipment, reserved air space may be cut from thirty miles to five miles per plane.

° ° °

A new French portable helicopter for one man weighs sixty pounds and when strapped over the shoulder of the passenger it can fly with its six-hp engine for ten hours.

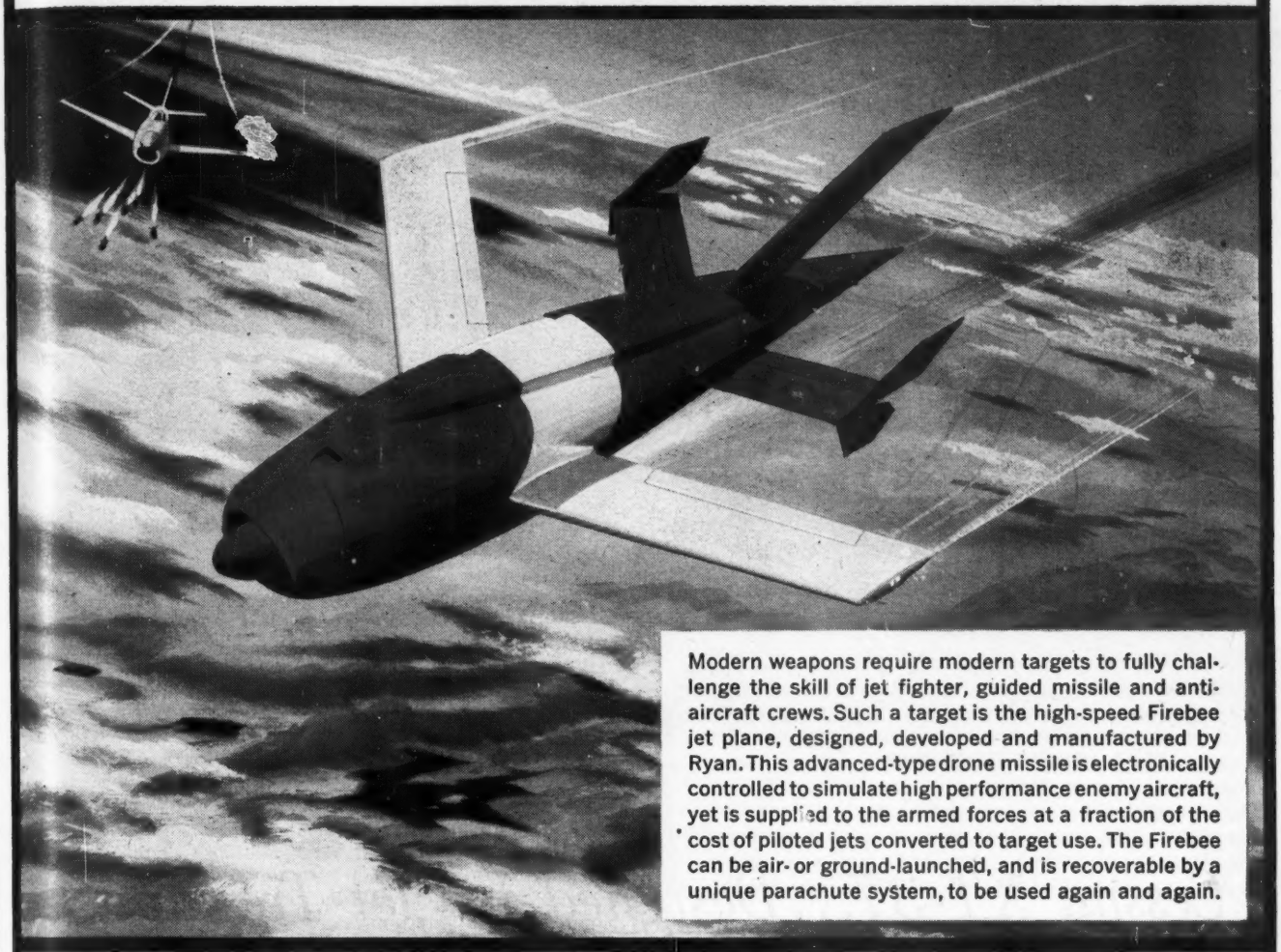
° ° °

A P-38 pilot has a seven-year contract with the California Electric Power Company to make rain in an eight by fifteen-mile area of the High Sierras to help five hydro-electric generators.

° ° °

Colonial has had the longest period of safe flying among the domestic trunk lines, with twenty-three years of operation without a fatal accident. Northeast has also had a perfect record during the twenty years it has been in business.

FIREBEE...TARGET FOR TODAY



Modern weapons require modern targets to fully challenge the skill of jet fighter, guided missile and anti-aircraft crews. Such a target is the high-speed Firebee jet plane, designed, developed and manufactured by Ryan. This advanced-type drone missile is electronically controlled to simulate high performance enemy aircraft, yet is supplied to the armed forces at a fraction of the cost of piloted jets converted to target use. The Firebee can be air- or ground-launched, and is recoverable by a unique parachute system, to be used again and again.

Another Example of How

RYAN BUILDS BETTER

Already a seven league stride ahead of other target planes and towed targets, the Firebee drone missile has a large growth factor for future development. Its development demanded special ingenuity and the most advanced scientific knowledge. This achievement is just one of a long list of solid contributions in the company's 32 years of consistent growth in building the planes and aeronautical products which have helped develop America's air power.

Specialized, yet versatile, Ryan is uniquely equipped for today's difficult research, engineering and production tasks. It excels in the ability to create and produce complex, high quality products at low cost—and deliver them on time.

Engineers looking for a challenging future will find outstanding opportunities at Ryan.

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* * *

It is a privilege for us here at CESSNA to team with the Air Force in its forward-thinking plans for the jet age.

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WICHITA, KANSAS

AIRPOWER IN THE NEWS

■ A man who travels faster on the ground than most pilots have flown through the air has set another ground speed record. **Lt. Col. John Paul Stapp,** chief of the Aero-Medical Field Laboratory at the Holloman Air Development Center, N.M., and an **Air Force Association award winner,** has traveled **632** mph in a rocket-propelled sled during air crew survival studies. In his latest high-speed run at the Holloman Center, Colonel Stapp shattered, by more than 200 mph, his own record for a ground run (see "Airpower in the News," July '54 and "Desert Sleigh Ride," May '53).

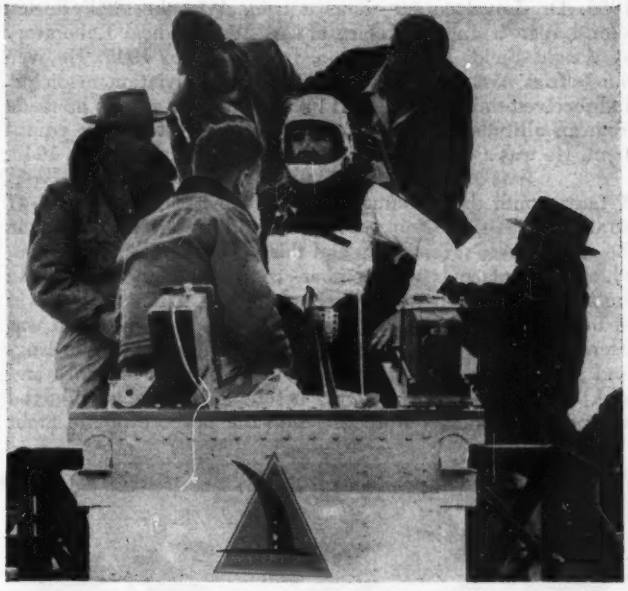
Colonel Stapp

For the test, Colonel Stapp was strapped into his seat with a special nylon web harness made up of shoulder and leg straps, chest and lap belt and tie-down straps. He wore no protective clothing except a plastic helmet and a clear plastic-visor to protect his face. The windshield had been stripped from the **Northrop-built** sled for the run. The nine rockets blasted off with a total force of **40,000 pounds of thrust,** catapulting the sled to a 632-mph speed from a standing start in five seconds. While traveling the 2,800 feet along the track, the sled passed a **Lockheed T-33 jet** that was photographing it from overhead. Then the sled coasted for less than half a second and was braked to a dead stop in slightly more than another second. The sudden stop subjected Colonel Stapp to a **deceleration of thirty-five times gravity,** a force that pressed his eyeballs against his eyelids so hard that he got two black eyes and was temporarily blinded. Later medical exams revealed that he suffered no permament ill effects from the run.

Colonel Stapp's experiments are being held to develop procedures and equipment that will make it safer for crews of supersonic aircraft to **bail out at high altitudes** and increase their chances to survive the forces resulting from tumbling, windblast, and deceleration. Colonel Stapp was awarded **AFA's Science Trophy** for 1954 at the **Convention in Omaha** for his "research into the problems of high-speed flight, conducted at grave personal risk."

■ **Maj. Gen. Sory Smith,** Commander of the **Pacific Air Force,** has announced that the **Seventh Air Force,** a World War II command that was reactivated in January, will have its head-

Gen. Curtis E. LeMay, Commander of SAC, looks over a six-year aircraft accident trend chart. It shows the steady decrease produced by SAC's aggressive safety program.



Last-minute adjustments are made by AF and Northrop technicians to secure Lt. Col. John P. Stapp to the seat of the high-speed rocket sled before his record 632-mph run.

quarters at **Wheeler Field, Oahu, T. H.** Also, before a Congressional subcommittee making a general survey of Hawaiian land problems, General Smith discussed plans to build up the Hawaiian Islands as an **outpost of American defense.** The AF, according to General Smith, plans to build up Hawaiian airpower by basing fighter squadrons on Kauai and Oahu Islands. Since World War II, the Hawaiian Air National Guard's **199th Fighter Squadron** has been responsible for the air defense of the Islands. Hawaii is also slated to become an "early warning" post for the Continental Air Defense Command.

■ Just as the famous Smith & Wesson revolver made all men equal, so will the possession of an **atomic weapon** make **small nations the equal of big powers,** according to **Bernard M. Baruch.** And he believes that the time is near when small nations will have "the bomb." His prediction is borne out by nuclear experts who say that the principles involved in making atomic bombs are now so well known that countries like Norway, Sweden, the Netherlands as well as Poland and Czechoslovakia could produce them if they wanted to. Mr. Baruch pointed out that **international atomic control** would have to start with the ownership of raw materials and be followed up with control and inspection of processes, with swift and sure punishment meted out to any violators. He said that the whole problem of agreement on control becomes more difficult if all nations have a bomb.

■ The rate of **aircraft accidents** in the **Strategic Air Command** has been steadily decreasing for the past several years and reached an all-time low of **thirteen mishaps per 100,000 flying hours** during 1954. This compares with **fifty-four** accidents per 100,000 flying hours in 1949. SAC's achievement was made despite the fact that the Command's medium bomber units converted from propeller planes to six-jet B-47s, and the emphasis on the techniques of air refueling. Everything from scraped wing tips to major accidents counts in tallying the statistics.

■ **General Dynamics Corporation** will provide funds for the establishment of an **Institute of Nuclear Medicine,** an organization to be devoted to nuclear applications in the fields of curative and preventive medicine and public health. The appropriation will be made to the **Lovelace Foundation** for Medi-

(Continued on following page)

cal Education and Research, Albuquerque, N. M., where the Institute will be located. It will be under the direction of **Dr. W. Randolph Lovelace II,** vice president and director of the Foundation. Active in aviation medical research since 1938, Dr. Lovelace served as a colonel in the AAF during World War II and was chief of the Aero-Medical Laboratory at Wright Field, Dayton, Ohio, from 1943 to 1945. He won the **Jeffries Award** in 1948 for his work in aviation medicine, and received the Distinguished Flying Cross for a jump he made from an altitude of 40,200 feet to test bail-out oxygen equipment. He was a co-winner of the **Collier Trophy** award in 1940.

■ Last month the AF announced that one of its **Boeing B-47** Stratojets had set a **new record** for military jets by staying in the air for **forty-seven hours and thirty-five minutes.** The flight, which took place last November, covered **21,000 miles,** with the bomber shuttling **between England and Africa.** Col. David A. Burchinal, one of those aboard the plane, said the flight was intended to last about half that long, but that weather in England prevented a landing there. So the B-47 flew to Africa and back twice, refueling in flight, before a landing in England was possible. Colonel Burchinal said the purpose of the flight

Wide World Photos, Inc.

The Collier Trophy "for outstanding achievement in aviation" went to E. H. Heinemann, shaking hands with President Eisenhower, and J. H. Kindelberger on December 17.

was to "do some experimenting on what would happen on a long-range flight lasting about twenty-two hours." The flight originated at Davis-Monthan AFB, Ariz., where Colonel Burchinal commands SAC's 43d Bomb Group.

■ If the Communists strike again in Korea, the United States **"would be ready to use atomic weapons,** if needed," according to **Adm. Arthur W. Radford,** chairman of the US Joint Chiefs of Staff. Admiral Radford made the comment while in Seoul on a world tour and also said that military aid to Korea would be continued as long as it is needed. He also predicted that an attempt by the Reds to invade Formosa would be doomed to failure. But, he said, "I don't think any direct invasion attempt is coming as long as we have our mutual defense pact [with Nationalist China]."

■ A name famous in the infantry was added to the Air Force roster when **William F. Dean, Jr.,** enlisted in the USAF at San Francisco on December 27. He is the son of **Maj. Gen. William F. Dean,** the infantry commander and Congressional Medal of Honor winner who was captured early in the Korean war.

■ Air Force Cadet **Lt. Col. Larry D. Peters,** National Commander of the **Arnold Air Society** and ex-officio member of **AFA's Board of Directors,** will receive the first annual **Daughters of the American Revolution** award to the Air Force. The presentation will be made during the National Conclave of the Arnold Air Society in Washington, April 7-9. The award, an **engraved military wrist watch,** will go each year to the National Commander of the Arnold Air Society until the first class graduates from the Air Force Academy. Then it will go to the member of the graduating class ranking highest in the **study of history.** Awards have been presented for many years to the Army, Navy, and Coast Guard by the DAR, and the group decided this year to add the Marines and Air Force to their program of recognition for outstanding graduating students in military establishments. Peters is a student at the University of Omaha, Nebr.

■ **Henry A. Du Flon,** Special Assistant to the President's Advisor on Personnel Management at the White House for the past year and a half, became **Deputy Assistant Secretary of Defense for Manpower and Personnel** on February 1. While at the White House he specialized in the development of legislation and programs affecting overseas personnel.

■ **Dr. William H. Huggins,** a professor of Electrical Engineering at Johns Hopkins University in Baltimore, has been awarded the Decoration for **Exceptional Civilian Service** by the Air Force. The AF's highest honorary civilian award was presented to Dr. Huggins by **Lt. Gen. Thomas S. Power,** ARDC

ARDC Commander Lt. Gen. Thomas S. Power congratulates Dr. William H. Huggins after awarding him the AF's highest honorary civilian award at a ceremony in Baltimore.

commander, in Baltimore. The citation said that "Dr. Huggins successfully established new approaches in the fields of electronics, hearing, and communications. His many scientific achievements have had a profound and far-reaching influence on the design of practical equipment for the USAF." Dr. Huggins was Chief of the Plans Branch, Directorate of Electronics Research at the AF Cambridge Research Center, Mass., from January 1946 to August 1952.

■ **Staff Changes . . . Brig. Gen. Alfred R. Maxwell** is the new Commander of the Rome AF Depot, Griffis AFB, N. Y. He was formerly at Hq. USAF and succeeds **Brig. Gen. Milton F. Summerfelt** who goes to the Advance Planning Group, Hq, USAF . . . **Brig. Gen. Frederick E. Calhoun** has been assigned as Deputy Commandant, Industrial College of the Armed Forces at Ft. McNair, Washington, D. C. He had been Director of Industrial Resources, DCS/Materiel, Hq. USAF . . . **Maj. Gen. Robert B. Landry** takes over as Commander of the Fourth Air Force at Hamilton AFB, Calif., on February 1. General Landry, who has been Deputy Commander of the Second AF, will succeed **Maj. Gen. Alfred A. Kessler, Jr.,** who retired at the end of January . . . In January, **Maj. Gen. Sory Smith,** Commander of Pacific AF, was assigned additional duty as Acting Commander of the newly organized Seventh AF. At the same time, **Brig. Gen. Herbert L. Grills** was released as Deputy for Personnel, FEAF, and assigned as Advance Commander of the Seventh AF, Hq. on Guam . . . **Brig. Gen. Russell L. Waldron** is the new Commander of the 483d Troop Carrier Wing at Ashiya Air Base, Japan.—END

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AIR FORCE

THE MAGAZINE OF AMERICAN AIRPOWER

Volume 38, No. 2 • February 1955

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THE COVER

The destruction caused by a tactical A-bomb, as visualized by artist Charles deM. Barnes on our cover, represents one phase of the counter-force strategy that T. F. Walkowicz discusses on our lead article this month. Mr. Walkowicz's argument, briefly, is that we must use our two military advantages (in nuclear weapons technology and in delivery systems) against enemy military forces rather than against cities, factories, or people, if war should come. For more on the subject, see page 25.

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SHOOTING THE BREEZE

Leo Durocher once was quoted as saying, "Nice guys don't win." We've known a lot of people in our day who have proved Leo wrong but none more so than Gen. John K. (Uncle Joe) Cannon. So the news of his death at the age of 62, of a heart attack at his home in Arcadia, Calif., hit us pretty hard. Uncle Joe was a nice guy, one of the best, but he was a winner, too, as his Air Force career proved. A tactical air expert, his last assignment before retirement was as commanding general of the Tactical Air Command. When he left the Air Force last March, he had thirty-seven years of service under his belt and was senior general of the Air Force, with the serial number of "three." We knew him best when he had the Air Training Command back in 1948. And our favorite Cannon story concerns the time Lockheed test pilot Tony LeVier visited Barksdale with the then-brand-new T-33. LeVier was taking Training Command brass for rides in the new trainer. When General Cannon climbed into the cockpit, LeVier asked, "What kind of ride do you want, General? Straight and level, or shall I wring it out?" General Cannon, then a spry 56, replied deadpan, to one of the top test pilots in the business, "Just make it easy on yourself, son."

Gen. John K. (Uncle Joe) Cannon—"a nice guy, and a winner too."

Jimmy Stewart, co-star with June Allyson in "Strategic Air Command," talks with Gen. Curtis E. LeMay, Commander of SAC, and Beirne Lay, Jr., author of the story, at a reception following the Washington preview of the movie.

General Cannon, like several of the old-timers in the Air Force, began his military career on the ground, in the infantry. A graduate of Utah Agricultural College, he served as an infantry officer in World War I, returned to the Army only a few months after his discharge in 1919 and quickly transferred to the Air Service. He led the Twelfth Air Support in the North African invasion in 1942, organized the Air Training Command of the Mediterranean Theater, was deputy commander of the Allied Tactical Air Force in the invasions of Sicily and Italy, headed the Twelfth Air Force and the Mediterranean Allied Tactical Air Force for the invasion of Southern France in August 1944. His support of the Rhone Valley campaign of late 1944 is considered a tactical classic and he was called "Mr. Tactical Air Himself." He liked to fly his own P-47 and was the first pilot to ditch a Mustang in the ocean and get out alive. This was off the Italian coast, and General Cannon lost two front teeth in the process. He was commanding US Air Forces in Europe during the Berlin Airlift.

A devout Mormon, General Cannon didn't smoke, seldom took a drink, and, according to a former aide, "never lost his temper and never said anything bad about anyone." He was fond of saying that "no general is any better than the people who work for him." No spit-and-polish commander, he was personally meticulous, and the same aide told us, "I could walk through a mud puddle and look dirtier than the general would if he fell in it." At the time of his death, General Cannon was chairman of the board of the Fletcher Aviation Corporation, Rosemead, Calif.

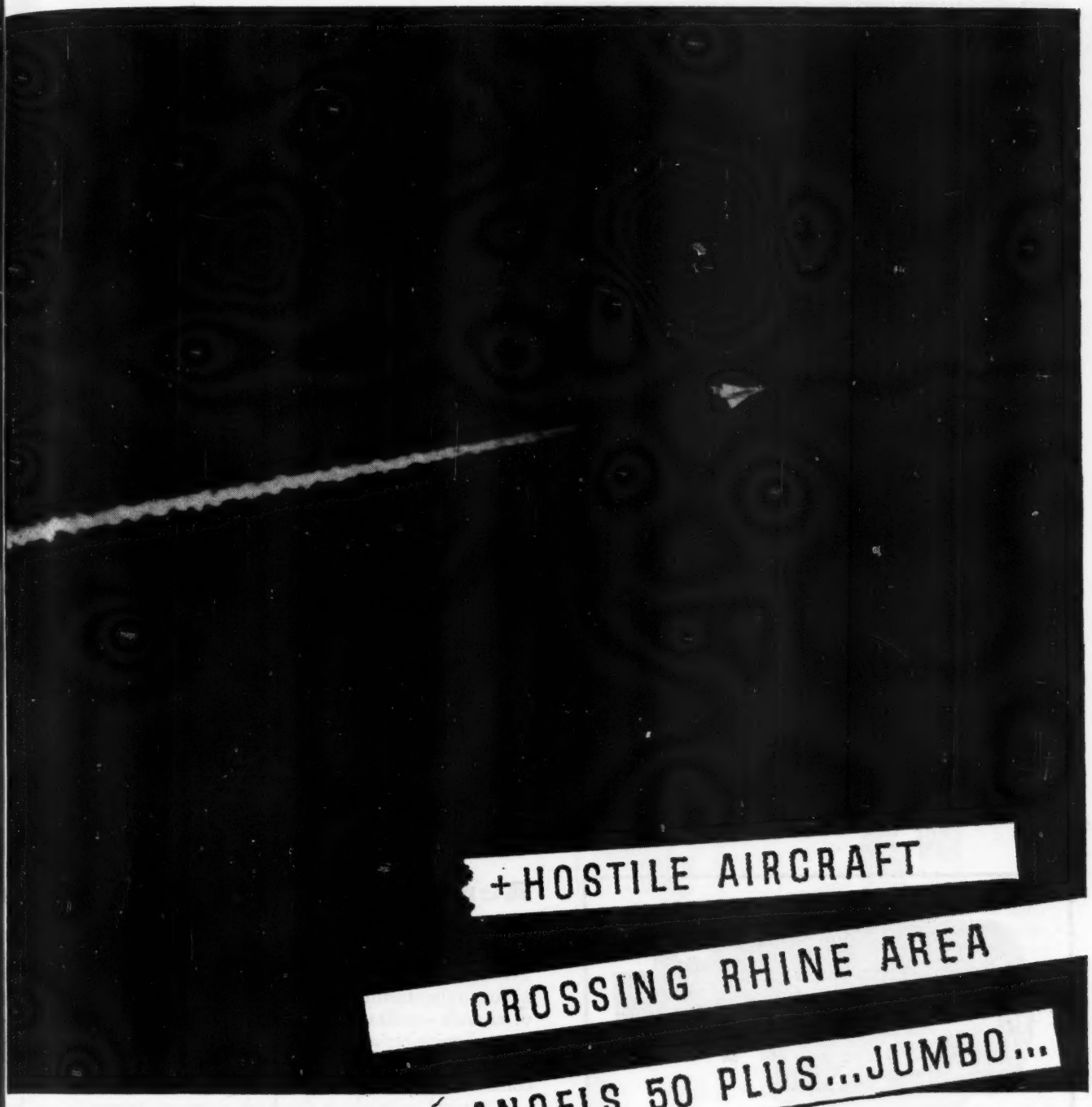
☆

Watch for Jimmy Stewart's new picture, "Strategic Air Command," to be released sometime this spring. We saw it previewed in Washington, and it tells the SAC story mighty well. June Allyson plays Mrs. Jimmy again, as she did in "The Glenn Miller Story." Beirne Lay, Jr., a former AIR FORCE Magazine author (World War II), did the original story and co-authored the screen play. It's a Paramount production in VistaVision (giant screen) and Technicolor. Co-starring are Convair's mighty B-36 and Boeing's sleek B-47, featured in the finest color aerial photography we've ever seen. The present title was arrived at, we're told, after playing around with several suggestions. At one point, Paramount was going to call it just plain "SAC," until a wag pointed out that billboards then would have read, "James Stewart and June Allyson in SAC." This could have been the biggest thing since the famous sleeping-bag in "For Whom the Bell Tolls." The Air Force Association and Paramount co-sponsored the preview, which was attended by such Air Force dignitaries as Secretary Talbott, General Twining, and General LeMay. More than 400 Congressmen were in the audience.

☆

Our favorite author, M/Sgt. Frank Clifford, has rung the bell again with his article, "How To Be an SOB," in our January issue. His pithy comments on leadership have aroused the interest of industry as well as the military. The Leland Electric Company of Dayton, Ohio, wrote us, "We feel that this article is an excellent summary of some basic rules for good 'foremanship' and so we desire to distribute it to our key production personnel." Also from Dayton came a letter from the Sheffield Corporation which asked for twenty-five copies. On the Air Force side, the commander of the Fifteenth Air Force, Maj. Gen. Walter C. Sweeney, Jr., wired for permission to reproduce enough copies to give one to each of his officers. Likewise, Col. J. C. Jennison, Jr., commanding the 301st Bombardment Wing, Barksdale AFB, La., who calls it "one of the finest of its kind

(Continued on page 19)



If–and when–that message is clicked out on the teletypes of Western Europe's radar network, New Yorkers, and indeed all America, had better batten down their hatches. It may well be that that pregnant message will signalise the outbreak of World War III. For those who are not airmen, Angels 50 Plus is R.A.F. lingo for altitude over 50,000 ft. Jumbo could mean carrying the Big Bomb, Atomic or Hydrogen. It is a laconic message, but then the R.A.F. is given to understatement.

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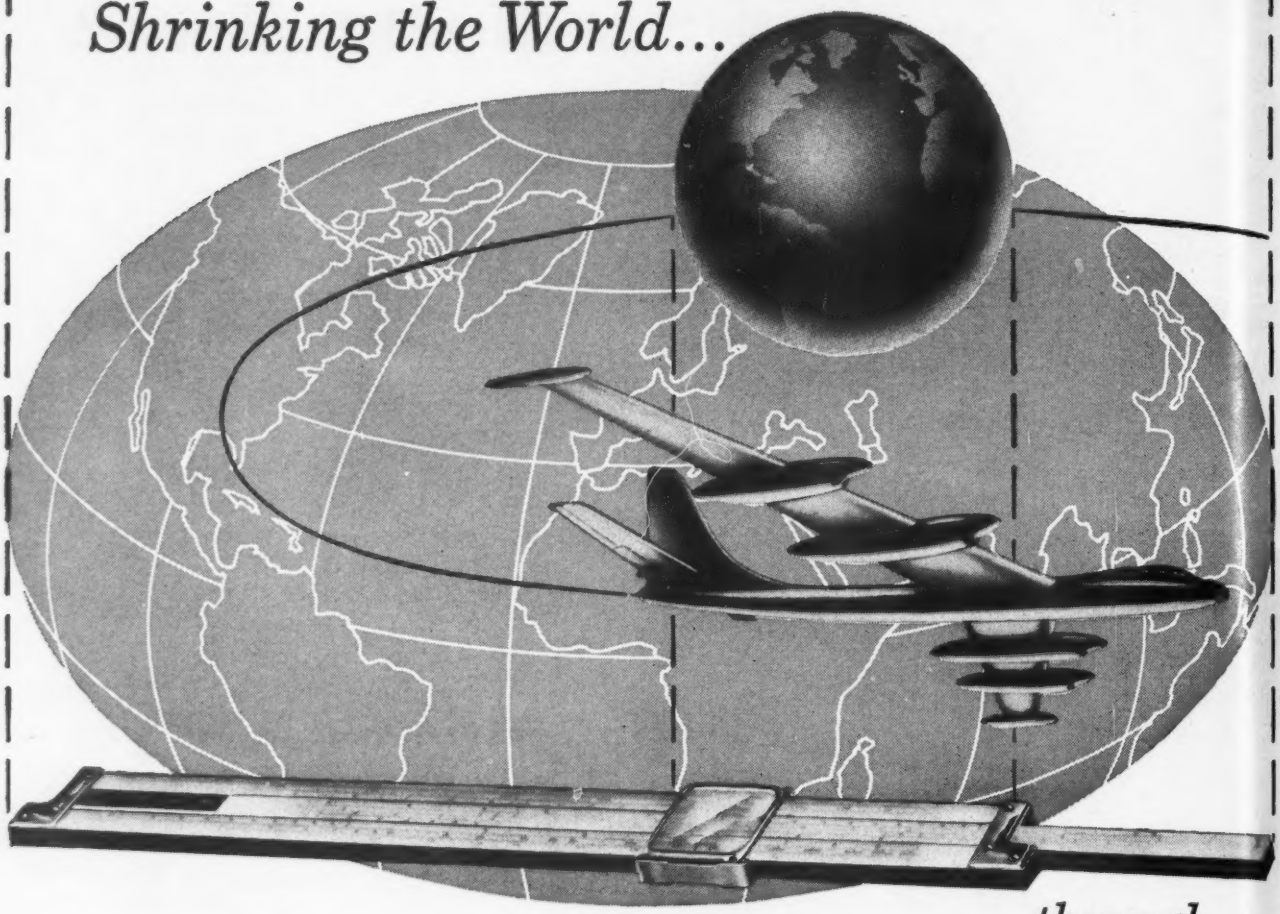

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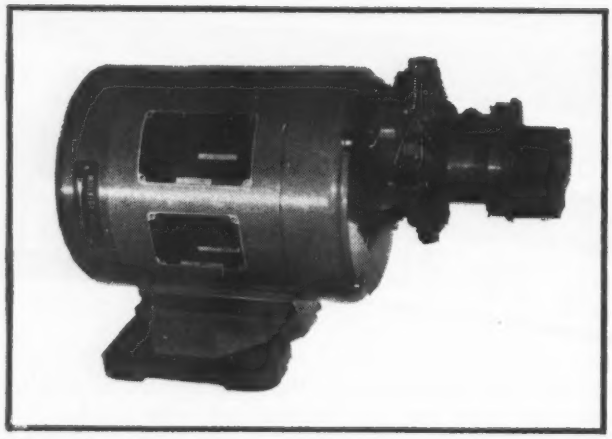

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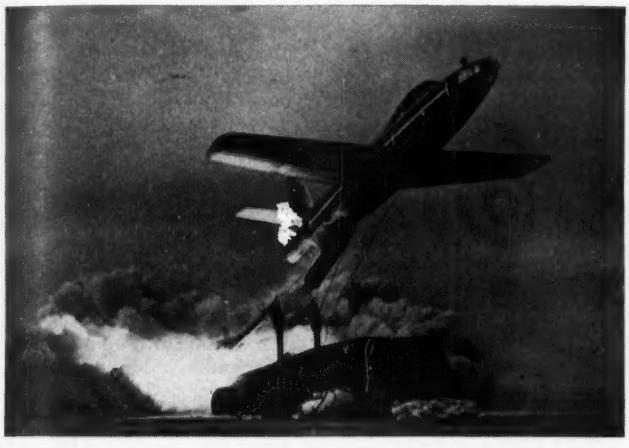
SHOOTING THE BREEZE——CONTINUED

I have ever read." Col. Stanley I. Hand, commanding the 8th Air Rescue Group, Stead AFB, Nev., wants all his officers to have a copy. Capt. James Rathbun, Director of the Leadership Academy of Ellington AFB, Tex., intends to use it as training material. So do several Professors of Air Science for their AFROTC cadets. We like to think that Clifford represents the intellectual level of the senior Air Force non-coms, even though the majority may not be blessed with his ability to turn a neat phrase.

☆

One of the keys to the counter-force strategy our author T. F. Walkowicz talks about on page 26 is the need for dispersal. One way to speed dispersal is to shorten take-off and landing requirements for aircraft. And, just as we were closing this issue, along came news from Martin Aircraft and the Air Research and Development Command that they have been launching Republic F-84s from truck-drawn launching ramps. The technique is essentially the same as that used to launch Martin's Matador pilotless bomber. A "booster bottle" filled with a propellant kicks the aircraft off the launching ramp, with



A technique that may some day make front-line airstrips obsolete has been developed for the AF. Here a Republic F-84 Thunderjet is launched from a platform on a truck.

the help of the plane's engine at full throttle. The bottle is jettisoned once the propellant is exhausted. Martin test pilot Bob Turner says the unconventional take-off isn't as tough on the pilot as a carrier catapult launching. Put this technique together with the Navy's experience in vertical take-off and with various types of arresting gear that are being worked on and soon we may have the airfield problem licked for tactical operations.

☆

An Air National Guard acquaintance of ours, a fighter-jockey type, well nigh flipped his crash helmet the other day over Dayton. He was approaching Wright-Patterson when the tower warned him to keep his eyes peeled for another jet in his near vicinity. The closest plane he could spy was an F-86 miles away and he was wondering why the tower was so hot and bothered. Whoosh! A jet flashed by his wing-tip so close that its unmistakable high tail all but smacked our friend in the eye. Our man gulped, looked again, and broke into a cold sweat when he saw that it was, indeed, a MIG-15, no less! He landed all a-tremble and was relieved to find out the Russian-built jet was the one the North Korean pilot had delivered for the $100,000 reward. Wright-Patterson researchers were putting the fighter through its paces.

☆

The air logistics conference sponsored by the Air Force Association in Washington last December (see page 67) provoked an editorial by publisher Wayne W. Parrish, of *American Aviation* Magazine. Parrish said, in part, "It was quite an extraordinary conference of over 800 leaders of industry and government.

(Continued on following page)

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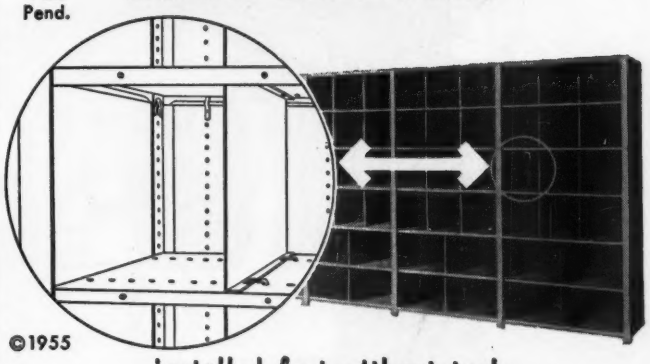

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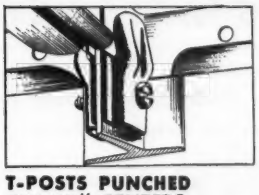

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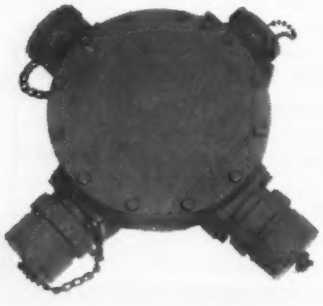

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"But it was much more than that. It was an all-out attempt to focus the attention of the Air Force on the greatest single weakness in that branch of the armed services."

Sparking events like this is one of AFA's prime functions, we figure, and we're going to keep it up as long as a need exists.

☆

We hear that the Air Force is about to approve a new summer uniform that will be real cool, man. It will include tropical-style sun helmets, short-sleeved shirts, bush jackets, and shorts. The general effect will be similar to the British Army summer garb. The fabric is the familiar khaki shade, but in a breezy, basket-weave cotton. The shirt will take a tie when the bush jacket is worn, but can also be worn open at the throat, sport-shirt style. Three-quarter-length socks will be worn with the shorts. It will be up to the major commands to lay down ground rules for wearing shorts versus long trousers. The new threads will probably be available in Base Exchanges in time to wear this summer although chances are they won't get to clothing sales stores for a while. Problem of how to wear the insignia with the new uniform hasn't been licked yet. Our word is that shorts will be frowned on for Pentagon duty, Washington's torrid summers to the contrary and notwithstanding. The Concrete Cobweb's air conditioning is the reason.

☆

Who says the idea of evacuating our cities is only wishful thinking? A recent survey, made by an independent traffic planning firm for the Federal Civil Defense Administration, indicates that 800,000 persons could get out of the metropolitan area of Milwaukee, Wis., in as little as three hours after the sirens begin to wail. We were interested since the study reinforced the conclusions of two of this month's authors, Maj. Ken Blank (page 30) and Brig. Gen. Dale O. Smith (page 31). The Milwaukee survey envisages blocking off certain main streets as arterial escape routes, as General Smith also suggests. And it points up the need for evacuation kits, full gas tanks, and ride-sharing arrangements, which the Blanks and other SAC families already include in their survival preparations. We think it significant that the Strategic Air Command, which probably trains as hard as any peacetime organization in military history, has taken time to worry about its wives and children. Here's a case where the military is ahead of the civil populace in what is considered essentially a civilian field.

☆

We like to think of ourselves as comparative youngsters. But we aged rapidly when our office was visited in late December by the officers and directors of the Arnold Air Society, honorary fraternity of Air ROTC cadets. Our college days seemed a long, long time ago. The cadets annually give up a good chunk of their precious Christmas vacation to come into Washington for a Pentagon briefing and a directors' meeting. All eleven area headquarters and AAS national headquarters were represented by the seventeen cadets who showed up. The cadets spent a full day in the Pentagon, where they heard briefings on various phases of the Air Force and also had a chance to express their own views on ROTC affairs in a symposium. Vice Chief of Staff Gen. Thomas D. White entertained the cadets at lunch. Succeeding days, December 29 and 30, were taken up with meetings of the Executive Board of the Society and in discussing mutual problems with national headquarters staff of the Air Force Association. AAS and AFA have a joint membership agreement whereby Arnold Air Society members automatically become members of the Air Force Association (see AIR FORCE, November '53, page 42).—END

For the word on AFA's 1955 Convention and Reunion, and the Airpower Panorama, see page 87.

Air Force jet pilots at Alexandria AFB, La., recently gave Spar a rugged workout, flying over 1,000 F86D night sorties "by the dials" and coming in on Spar to perfect landings every time.

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Experts Everywhere Approve World's First Portable GCA Radar

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Spar, easily transported via C-47, can be flown to forward airstrips or isolated bases.

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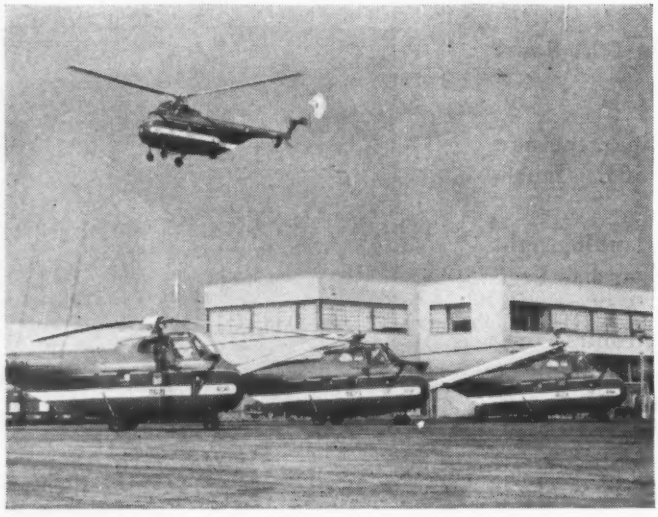
L/E SPAR

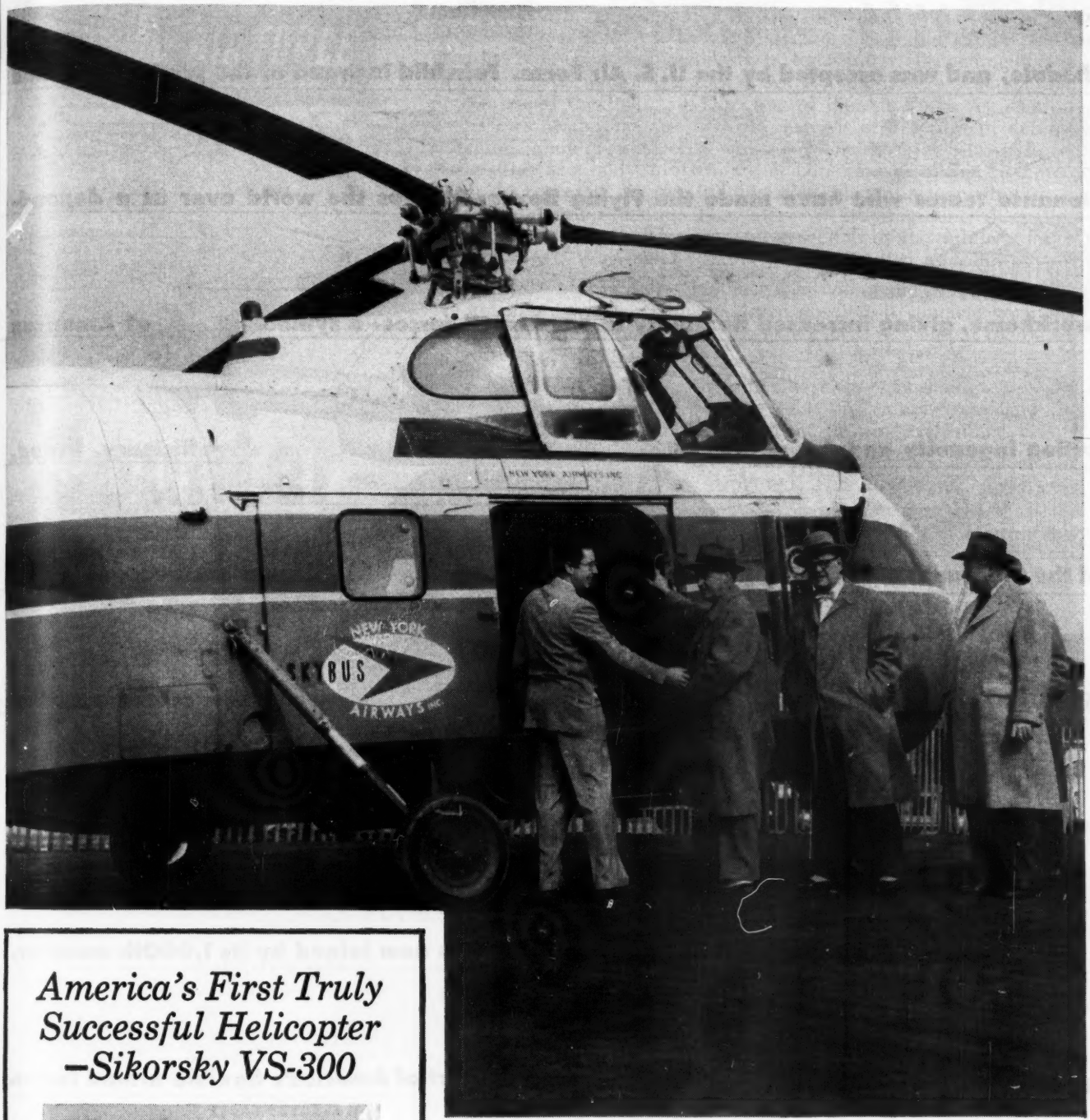
NEW SERVICE STARTS—Hostesses of five airlines—United, Western, Pan American, American and TWA—cut a ribbon to open Los Angeles Airways' first helicopter passenger route after eight years of scheduled mail operations. First passenger service is between Long Beach and Los Angeles International Airport, with Sikorsky S-55s.

AROUND THE WORLD WITH SIKORSKY HELICOPTERS



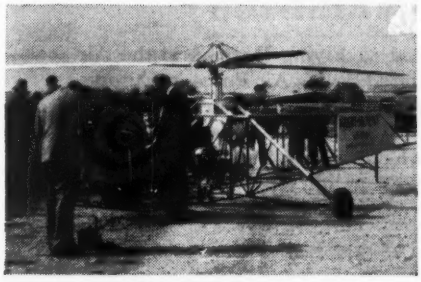
RCAF SIKORSKYS—First all-helicopter squadron in the Royal Canadian Air Force is now in operation with rugged Sikorsky S-55s. These wilderness-proved transport helicopters are now based at Bagotville, Quebec. Here are four of ten S-55s in the initial Canadian order. All were flown to Canada from Sikorsky's plant.

BRITISH USE S-55s—Helicopter passenger service between London Airport and Waterloo is scheduled to begin this spring. British European Airways will use S-55s for the flights, which take 18 minutes each way compared to more than an hour by surface travel. BEA pioneered helicopter passenger flights in 1950 with S-51s.



SERVICE EXPANDS—New York Airways has expanded scheduled helicopter passenger service both north and south from its New York City inter-airport routes. Cities added were Trenton and New Brunswick, New Jersey, on the south, and suburban White Plains, New York, and Stamford, Conn., on the north. Above, passengers board a Sikorsky S-55 at the heliport in Stamford.

America's First Truly Successful Helicopter —Sikorsky VS-300



MAY 20, 1940—First public view of Sikorsky's historic VS-300—America's first truly successful helicopter—came May 20, 1940 as Igor Sikorsky was awarded Helicopter Pilot License No. 1. The VS-300 was only the first of many Sikorsky achievements in advancing helicopter development and industry-leading production efficiency.

SIKORSKY AIRCRAFT

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on schedule, and was accepted by the U. S. Air Force. Fairchild is proud of the pilots, crews and

maintenance teams who have made the Flying Boxcar famous the world over as a depend-

able workhorse, giving increased flexibility to our Armed Forces—a symbol of American

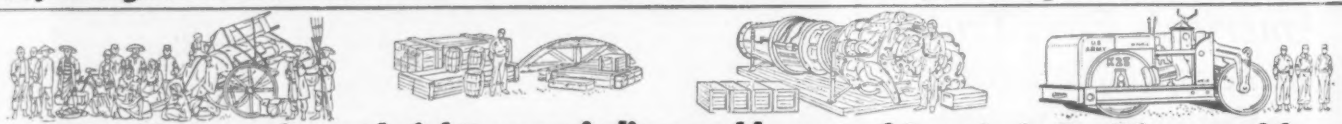
production ingenuity and design efficiency. Proud,

too, of the thousands of Fairchild men and women whose

combined skills have made this production record possible.

...Proven in combat and in peace, proven in tropic and arctic opera-

tions, this great world-wide team of C-119 Flying Boxcars is now joined by its 1,000th member,



as together they reach new heights as an indispensable part of America's flexible armed forces.

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COULD AIRLIFT 30,000,000 POUNDS

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Typical of the many vital jobs assigned to Flying Boxcars is the Air Logistics Service, established by the United States Air Force in Europe. Because of the Flying Boxcars' military flexibility and dependability, daily scheduled cargo flights are being made possible. A service was inaugurated, and is now in operation, which assures regular delivery of approximately 4,000 tons a month of vital military supplies and equipment at tremendous savings to our government.

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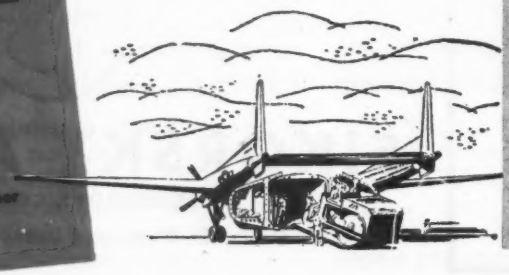

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AIR FORCE
FEBRUARY 1955

Counter-Force Strategy

How we can exploit America's atomic advantage

By T. F. Walkowicz

EDITORS' NOTE . . . Beginning on the following page is one of the longest articles that AIR FORCE Magazine has published in recent months. It is sober and scholarly in tone and well-documented in substance. The author is a former Air Force officer, a scientist, and a member of the Board of Directors of the Air Force Association. The views he outlines are his own analysis of our present defense dilemma. They do not necessarily represent those of the Air Force Association as a body, of its Board of Directors, or of the Air Force. They do represent, in our judgment, a substantial contribution to current defense thinking. They deserve attention and discussion on the highest levels of government as well as by the public at large. Basically, Mr. Walkowicz's thesis can be distilled as follows:

● The idea of a mobilization base that will swing into action *after* we get into a war has been rendered obsolete by nuclear weapons. We must win or lose with the forces we have in being at the outset of hostilities.

● A counter-economy strategy, in the sense of bombing cities and factories, will not do the job now that the United States and the Soviet Union have the mutual ability to destroy each other.

● At present, the United States still possesses a tremendous atomic advantage, if it is properly exploited. This advantage consists of:

First, a much greater stockpile of nuclear weapons than the Soviet Union possesses. This means that the United States can now use nuclear weapons for *all* purposes.

Second, a wide variety of flexible aerial delivery systems capable of putting nuclear weapons on a wide variety of targets.

● To exploit this atomic advantage the over-all airpower requirements of the United States consist of:

First, an overwhelming and continually improved and modernized long-range, i.e. intercontinental, offensive capability, with minimum dependence upon overseas bases.

Second, a similarly overwhelming and modernized short-range, i.e. tactical, offensive capability, widely dispersed and extremely mobile, and equipped with a variety of nuclear weapons.

Third, an effective active and passive air defense system which will safeguard our offensive forces and our nation.

Fourth, a modern air logistics system capable of supporting the offensive air arms on a global scale.

Fifth, an intelligence and reconnaissance capability geared to the rapid tempo of nuclear counter-force operations anywhere in the world.

● The above combination of air-atomic power would, for the first time, give us a choice between wholesale slaughter of soldiers and civilians alike on the one hand, and of being nibbled to death by subversion and local aggression around the perimeter of the Communist Empire on the other. And it would provide security without resorting to huge expenditures for conventional surface forces piled atop expenditures for adequate airpower. Thus we could, in Mr. Walkowicz's estimation, be able instantly to retaliate against aggression, not necessarily "massively," but in a degree consonant with the provocation and accomplish our great national aims by:

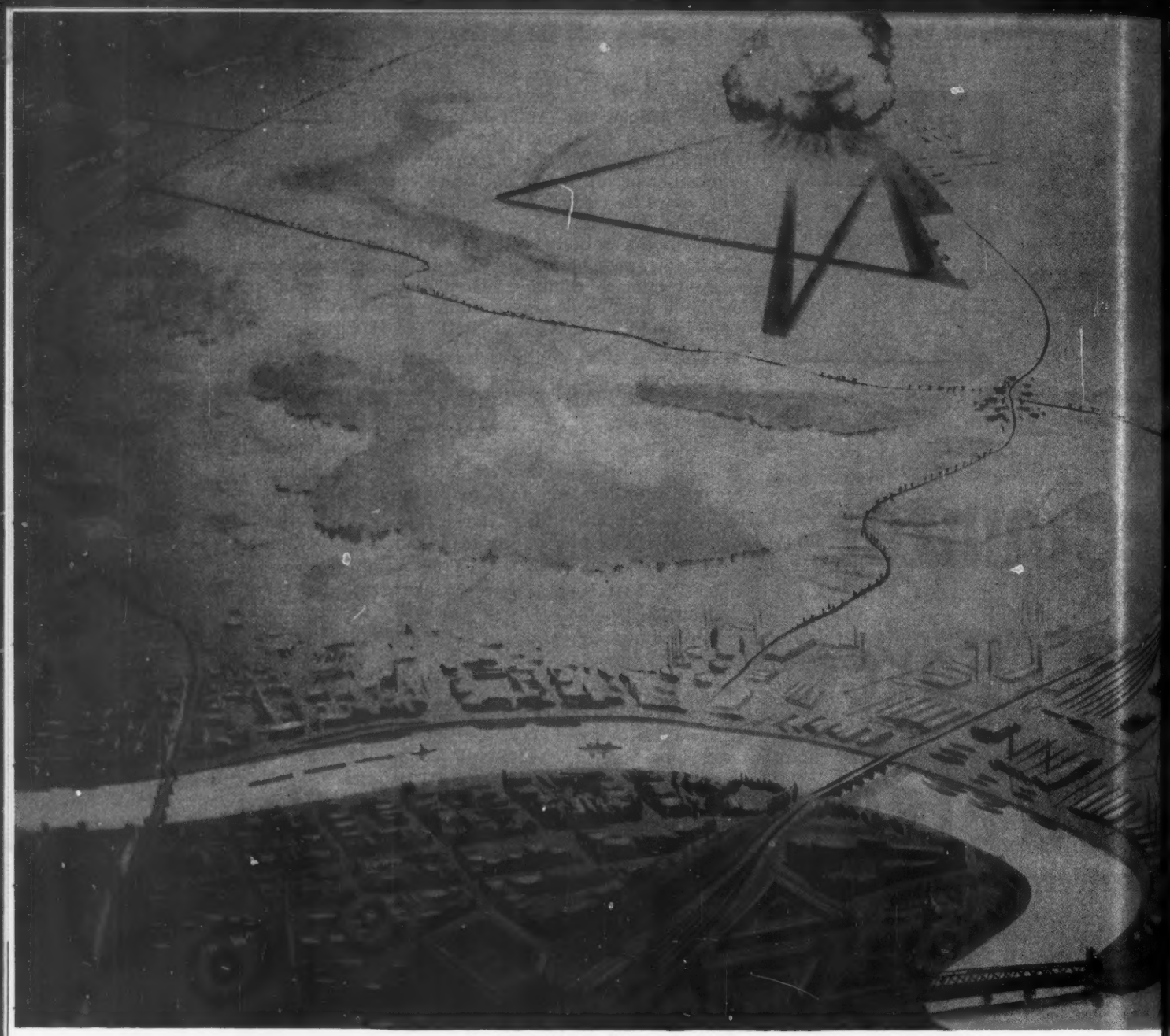
First, deterring World War III through our overwhelming long-range offensive capability, and:

Second, deterring, or winning if need be, local wars through a capability and a determination to strike decisively with air-atomic power at Communist forces of aggression anywhere along the periphery of the Iron and Bamboo Curtains.

The nub of the entire argument is that we must exploit our current advantage, in nuclear weapons technology and in delivery systems for those weapons, by employing them against the *military forces* of aggression in the full hope and expectation that we can thus achieve peace, with honor and with solvency.

We think these views deserve careful consideration.—The Editors.

Guided Missiles Division, Wyandanch, N. Y.; Kinetics Division, New York, N. Y.; Speed Control Division, St. Augustine, Fla.; Stratos Division, Bay Shore, N. Y.



A counter-force strategy wou it Re

THE WORLD is entering an era of great danger. The US and the USSR will soon possess the capability to wound each other disastrously. Although the US is currently ahead in some respects, both sides will possess this capability to an increasing degree, regardless of practicable defensive measures taken by either side to deflect and blunt a potential attack. This central fact has been known in general terms by responsible officials for some years. However, the enormous complexities of growing US and USSR air-atomic power, obscured by limited intelligence on Soviet capabilities and intentions, and compounded several-fold by sweeping technological advances in weapons and delivery systems, have made analysis of this problem most difficult.

Several factors of major importance can be perceived; Soviet *strategic* nuclear sufficiency, US *military* nuclear sufficiency and technological changes in airpower. These factors, taken together with economic considerations, point clearly to the need for a reassessment of air strategy, as the world moves into the nuclear age.

One such reassessment of air strategy is presented here. The situation we face is, of course, extremely complex, and no one can pretend to solve very many of the problems. Rather, this article questions some of the assumptions which underline our present air strategy, and advances some alternate suggestions for consideration. For example, with the passage of time (and thus with a growing, frightful strategic nuclear bombing capability on both sides), it will become increasingly difficult for a President of the United States to give the order to initiate strategic bombing, if the enemy has *not yet* bombed our cities. Yet, we are too prone to take it for granted that the enemy will solve the problem for us, *i.e.*, start right off by bombing our cities.

The nuclear armament race is dynamic, and we can only dimly perceive the future. Thus, national survival demands a flexible air strategy to meet changing conditions. USAF strategy already leans toward destruction of Soviet forces-in-being in the event of war; *e.g.*, SAC's first priority mission is now elimination of its Red counterpart. However, we still think too largely only in terms of all-out nuclear war and destruction of the Soviet econ-

wou it Red bases, spare cities.

omy or "will-to-resist." Doctrinal inflexibility inhibits objective analysis of (and development of military means for) the possibility or reaching decisively but *with discrimination* in the event of future local wars, without undue risk of all-out war or mutual city-industry bombing. This article attempts to analyze just such a possibility.

The USSR is now or will soon be militarily capable of delivering a heavy atomic attack on the US which could cause billions of dollars worth of damage, result in the loss of millions of US lives, and destroy or seriously diminish the ability of the US to support a major war effort. Against this threat, our active air defenses today possess a total "kill" probability of the order of thirty percent, *i.e.*, about seventy percent of attacking Soviet bombers would get through to their targets. Projected increases in defensive strength will lower the number of Soviet bombers getting through to about fifty percent in the next few years.

Such kill probabilities, when applied against reliable estimates of the Soviet atomic bomb production, do not indicate any decrease in the number of bombs theoretically arriving on US targets. Even the present estimated Soviet stockpile, if accurately placed on US targets, would be a catastrophic blow. The USAF SAC "Sunday punch," the principal ingredient of a counter-economy air strategy, has so far been an effective deterrent to *major* acts of aggression on the part of the Soviets. Now, however, the Soviets are approaching a position of symmetry with this vitally important SAC capability. For the Soviets, this will be a period of strategic nuclear sufficiency.

The US stockpile of fissile material is growing rapidly. Furthermore, important advances in bomb technology are being made. Simultaneously, the actual cost of employing nuclear weapons against military forces and strategic targets is decreasing rapidly in comparison with that of other means of destruction. Thus, as the result of large-scale production of fissile material, technological improvements in atomic weapons, and the trend indicating continued reduction in costs of fissile material, an era of US nuclear *plenty, i.e., military* sufficiency, is rapidly approaching.

True, we must not become complacent about the ade-

(Continued on following page)

quacy of US fissile material production and supply. The amount of fissile material needed to carry out a counter-economy mission is finite and relatively small. By contrast, the various counter-force and air defense missions require that fissile material be used much like ammunition; therefore, really large amounts must be produced to insure that enough is available at the right time in the right place.

However, we do now have nuclear weapons to employ against military forces; furthermore, this situation is improving steadily with time and we can and must stay ahead of the Soviets in this regard. Therefore, our military strategy must be based on a nuclear capability adequate for *all offensive* tasks, and also for *critical defensive* operations.

The qualitative and quantitative nature of the required air delivery capability, and its cost, are constantly being modified by technological changes in airpower. The advent of jet aircraft and near-sonic combat speeds has worked to increase appreciably the size and cost of military aircraft. The attempt to achieve intercontinental range, to give reasonable independence of air bases on foreign soil, has further accented this growth. Simultaneously, however, various techniques of range extension—some still in the early stages of development—are increasing the number of aircraft, with a wide range of sizes and performance, which will be able to contribute to the long-range bombing job. Other nuclear weapons will further increase the capabilities of this added number of potential weapon carriers. The day will soon arrive when *all our combat aircraft, including high-performance fighter types, will become bomber strike aircraft possessing devastating firepower.*

Similarly spectacular changes are in prospect in the field of air logistics. It is now possible to plan for factory-to-advance-base delivery of supplies, using aircraft operating over ranges of 3,500 miles at speeds between 300 and 400 knots. These aircraft will be able to operate, from present-day airfields, at direct costs of three to four cents per ton-mile. The flexibility of air transport, in turn, will greatly accelerate and facilitate changes in the present logistics system (methods of ordering, packaging, inventory keeping, etc.), thus acting as a catalyst in reducing the tremendous cost inherent in the long, surface supply "pipeline" situation. The entire cost of an air logistics system appears appreciably less than the savings in spare parts made possible by it. This future air logistics capability will greatly enhance the operational flexibility of airpower, since the same aircraft can also serve as in-flight refueling tankers.

Range-extended tactical combat aircraft, supported by a world-wide air logistics system, make operationally possible and economically feasible the rapid deployment of *task forces* to fight "brush-fires" or "limited wars" anywhere on the Soviet perimiter. These *task forces* need depend only on minimum overseas stockpiling (largely fuel and lubricants stored underground) and on overseas bases maintained on "austerity-tenant" standards.

In summary, airpower is in the sweep of a technical revolution which will profoundly influence the character of its aircraft, greatly increase its operational flexibility and striking power, and keep its over-all costs within reasonable margins.

The challenge of Communism, coupled with the neutralization—by airpower—of our historic ocean barriers, has placed unprecedented strains upon the American economy. We face the prospect of maintaining armed forces-in-being of great magnitude and expense, for an indefinite period of time. The unexpectedly early Soviet atomic explosion in 1949, followed by the Korean episode in 1950, brought a then-existing military economy drive to an abrupt halt and greatly accelerated a laggard US rearmament program. Soon thereafter, the inevitable inefficiency of hastily conceived military programs and the waste inherent in their rapid implementation became apparent, and led to great emphasis on improving the efficiency of our national defense effort and balancing the budget.

In the Soviet Union, a police state system is used to suppress consumer demand below normal levels. For this reason, the USSR presumably can continue military spending at a relatively high level for an indefinite period of time; however, recent trends toward greater emphasis on consumer goods indicate that even a police state may not be able to suppress consumer demand indefinitely.

Here, in the US, it appears that tax rates cannot be safely raised nor deficit financing indefinitely continued without seriously impinging on the traditional American way of life. The resulting pressures to reduce the cost of the defense establishment are enormous, and the new Administration has moved strongly to cut the costs of previous military force programs.

In this context, military planners must take the initiative in helping reduce the cost of defense to levels which can be successfully borne over the long pull. It *is not* being argued here that military planners should become economists, nor that they should compromise the military requirements of national security because of economic considerations. It *is* being argued that "maximum military effectiveness with limited budgets," or "national security at minimum cost," must become the military planners' watchword.

The technological changes in weapons and aircraft outlined above are the principal keys to a substantial reduction in the cost of producing, maintaining, and operating the required military forces for long-term security in the nuclear age. It is incumbent upon the Air Force to present to the country an airpower program which guarantees national security, takes maximum advantage of technological changes, and meets the required Spartan economic standards.

Army and Navy planners face a similar challenge and responsibility to balance realistically and objectively the cost versus effectiveness of their military forces programmed for the nuclear age.

Forces-in-Being vs. post-D-Day Mobilization

The key factor in winning World Wars I and II was the US mobilization base. Therefore, it is difficult to suddenly discard this concept in planning for victory in World War III.

Yet the outcome of a war in the nuclear age will almost surely be decided by forces-in-being rather than through post-D-Day mobilization. The tremendous destructive power of nuclear weapons now makes it possible for *one airplane* to deliver in *a single instant* many times the explosive equivalent of the entire bombing effort of the Allied Air Forces in World War II.

Considerably fewer than a thousand nuclear weapons will render the Soviet economy impotent, and probably even fewer than that will do the same to the economy of the US. The large-scale use of atomic weapons in counter-military operations (two to three thousand) can reduce armies, air forces, navies, and their supporting logistic systems to relative insignificance. This number of weapons can be delivered in a very short time.

Therefore, in a nuclear war, the combat potential of both sides will decline rapidly following D-Day, and the size of the mobilization base becomes practically irrelevant. The decisive phase of the war will have been fought almost

before anything still in factories on D-Day can be brought to bear on the enemy.

True, we dare not gamble that the first few months of any future war will be decisive. Thus, while concentrating on the war-readiness of our forces-in-being, we must also place adequate emphasis on duplicating certain vital parts of the industrial mobilization base, and on dispersal of both industry and people. However, this is far different from the thinking reflected in the Vance Committee Report* (the best interests of the nation will be served by substituting, to the greatest extent practicable, additional production facilities for stockpiles of military "end items"). Such thinking is not only obsolete, but extremely dangerous to the survival of the US.

This conclusion has certain implications concerning the cost and vulnerability of US airpower which will now be examined.

Abandonment of the mobilization base concept as the primary war-winning factor is an important first step toward minimizing the cost of a force-in-being. The present mobilization base concept involves not only building up excessive productive capacity, but also the additional expense of using this capacity on a one-shift or less basis, *i.e.*, "maintaining living and breathing production lines."

Maximum emphasis must be placed on larger production runs and lower production costs in fewer producing units (*i.e.*, uneconomic spreading of orders must be avoided). However, the larger production runs must not be achieved wholly through reduced emphasis on development-during-production, but also in part through a reduction in the number of types of aircraft and equipment produced. Similarly, the stockpiling of selected, long lead-time, multi-purpose machine tools is of great importance for the specific purpose of reducing development-to-production lead times. Furthermore, it should be clear by now that "avoiding uneconomic spreading of orders" does not mean concentrating defense production in large companies. Some prime contractors tend to "pull back" production into their own plants regardless of costs—while more efficient subcontractors starve for business. Of course, this is an extremely complex problem and, fortunately, the Air Force has been making progress toward solutions which are economically sound from a national viewpoint.

In summary, emphasis must be placed on producing the force-in-being and stocks of war consumables at minimum cost, but without sacrificing the qualitative superiority of that force or its capability for sustained operations beginning immediately on D-Day.

At present, the over-all vulnerability of the US to atomic attack is greater than that of the USSR. The capacity of almost all of our important war and war-connected industries is two to three times greater than that of the Soviet Union. On the other hand, this larger economic base is concentrated in fewer cities. Similarly, the offensive components of the Air Force, strategic and tactical, are extremely vulnerable to Soviet nuclear attack. Drastic measures must be taken for their protection, or the effects of the first Soviet strike on our capability to deliver nuclear weapons could be catastrophic.

The tactical air force and any SAC wings deployed in the European theater can be expected to suffer heavy damage in the initial enemy strike so long as they remain concentrated on relatively few airfields. Even SAC wings based in the US are vulnerable. The concentration of practically all of our SAC force on a relatively few airfields in this country (while the Congress drastically slashes air base construction funds) increases their vulnerability and reduces the deterrent effect of US offensive airpower.

The physical vulnerability of the US economy and its urban population can be slowly reduced through long-term dispersal programs, and national, state, and local governments should develop master plans for the decentralized location of *new* urban and industrial construction arising from the demands of a growing US economy. In this regard, the US enjoys a marked advantage over the Soviets through possession of a superior communications network which makes long-term decentralization of *new construction* a practical plan.

As for SAC, at the very least its maintenance facilities and fuel supplies should be provided with underground or adequate "hard-top" storage; over the longer pull, both more SAC bases and trends toward smaller, shorter take-off aircraft would make really wide dispersal of SAC possible.

Our economy and the US people must be provided with an air defense system which exacts a heavy toll on the enemy, even though loss of life and property will be magnified many fold by World War II standards, in the event of a Soviet attack. In view of this, we must now take urgent measures to minimize loss of life in the event of Soviet attack, by providing an adequate warning system and by implementing a program of evacuating all major cities at the initiation of hostilities. Furthermore, the present emphasis on air defense must be maintained, and increased as the situation requires.

'AMERICA PLANS NO WANTON DESTRUCTION'

"It makes a great difference whether victory is sought by the depopulation of a nation or by the disarming of a nation. . . . We can now aim directly to disarm an enemy rather than to destroy him as was so often necessary in wars of the past. . . . No matter how desperately we may be forced to fight in our own defense and in defense of our Allies, we shall hold to this principle: America plans no wanton destruction of people under enemy control, and we have no desire for revenge upon unfortunate populations who live in fear of their Communist masters."—Gen. Nathan F. Twining, USAF Chief of Staff, in a speech at Galveston, Tex., Feb. 9, 1954.

Simultaneously, reliable intelligence on Soviet air-atomic strength must become the prime determinant in setting a proper balance between present US offensive and defensive airpower. This balance between air offensive and air defensive strength is the cold-blooded business of our survival. This business profits little from reckless charges of disinterest in air defense hurled against military officials who have been fighting for years for resources to do the job adequately. Rather, the science-industry-military team must continue to work effectively together to construct a defensive system which leaves no margin for Soviet miscalculation as to our ability to survive and strike back, if attacked.

The actual deployment of our defensive airpower must provide for a maximum overlap between the air defensive requirements of our people and the economy, *and* those of a less vulnerable, *i.e.*, properly sheltered and dispersed,

(Continued on page 46)

*"Production Capacity—A Military Reserve," a Report to the Director of Defense Mobilization by the Advisory Committee on Production Equipment, January 1953.

Wearing a canvas cover as a protection against radiation, author's wife shuts off gas main in a family drill.

Pulling the electrical fuses is also part of the routine for fire prevention in case of an enemy atomic attack.

The youngsters accept the routine of the drill calmly. Here they huddle with Judge, the Saint Bernard, in the basement shelter. Face masks help protect them against radiation.

How an AF Family Trains for Survival

Do Your Homework

By Maj. Ken Blank, USAF

Below and on the next page are parallel articles on one of the nation's thorniest problems—how to survive a nuclear attack. Evacuation is the answer, say both Major Blank and General Smith. Ken Blank, who's assigned to Hq., SAC, took these pictures of his own family. He's written two other articles for us: "Death in the Night," in the September '51 issue, and "Recon Crews Snoop from 40,000 Feet," in June '52.

Brig. Gen. Dale O. Smith, who was formerly Director of Education at the Air University, is now a member of the Operations Coordinating Board, Washington, D.C. He was graduated from West Point in 1934 and was a World War II B-17 pilot. His most recent article for us was "Let's Educate Our Officer Corps," April '54. The views in his article are his own and don't necessarily reflect the views of the USAF or any government agency.

Civil Defense I

DURING the early morning hours an Air Force base is only half asleep. Bright lights flood the heavily guarded exits and entrances of the steel-fenced area that is as large as most of the surrounding communities.

On the flight lines the giant bombers rest, drenched in moonlight, while others brilliantly reflect the lights of the maintenance docks. Sharp-eyed air police with loaded carbines watch each bomber with the vigilance of a sheep-dog guarding a flock. Occasionally a high-pitched jet whine pierces the night air and echoes over the prairie.

In a dark secluded area the restless electronic eyes of the search radars stop their unceasing rotation. A quick second passes. Then the big dishes begin to focus back and forth. The concave pans settle down and in the invisible darkness point toward the northwest. Unidentified blips are showing up on the radar scope. Highly skilled electronic technicians calmly relay their information and keep the scopes keenly tuned.

Then, with no regard for the predawn morning hour, a dispersed array of sirens begins to wail, for one minute. Silence. Another one-minute wail moans across the base. Again silence. A third begins and lasts for another minute. Each man, woman, and child on the base is familiar with the warning—AIR ALERT.

Before the warning sirens end their shrieking, the entire populace is awake and moving. Within a few minutes officers and airmen are moving to their duty stations. Crew chiefs appear catlike out of the darkness on the flight line and race toward their bombers to check engines, instruments, fuel, supplies, and ready the big aircraft for the crews. Traffic moves along the avenues leading into the base as briefing rooms begin to fill up.

All over the base men take their positions to prepare the bomber wing to move upon command. In less than an hour the bombers start becoming operational and ready to fly. With deliberate patience the maintenance technicians increase their tempo at the docks. Few words are spoken but men and machines work just a little faster.

Before daylight breaks the bombers and crews are standing by—ready for war—an atomic war.

During this tense period another episode of the act which is seldom thought of and never mentioned is on stage. Mothers soberly arouse their children. Through eyes heavy with sleep the little ones watch drowsily while tiny infants cry out their objection to a rude awakening. Air Force families understand this way of life, understand completely because they live it each day, day in and day out.

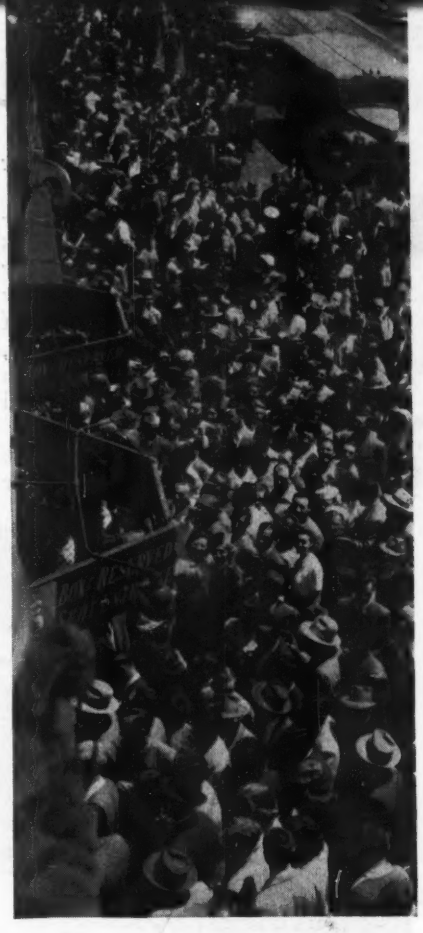
(Continued on page 32)

Evacuation—the Wall of a Modern City

'Get Out of Town...'

Everybody's Job

By Brig. Gen. Dale O. Smith, USAF



HISTORY is spotted with incidents which depict the emotional struggle involved when a man must choose between wealth and life. And because wealth is so hard to come by in this world, the value of life itself is sometimes discounted, however illogical this may be. Even though "you can't take it with you," people sometimes choose to die rather than relinquish their wealth as an alternative to death.

The arguments about the problem of evacuation in event of nuclear attack are akin to this illogical reaction to wealth versus life. The vast capital investment, the decades of toil that have gone into the building of America's great cities are incalculable. It is little wonder that we are so attached to our cities.

Anyone who considers the problem will choose evacuation as an alternate to nuclear destruction. But this is an intellectual choice. The real emotional decision can be put off. Something may turn up to make the final decision unnecessary. Certainly there is plenty of public optimism. In any event, war does not seem imminent, and we think we can cross the evacuation bridge when we get to it.

But we can't! This is a bridge we must build. It will take time, much time, and practice and *expense*. But otherwise, when the time comes, there will be no bridge to cross. We'll be trapped.

Evacuation of a modern city will be a good deal more than a grand fire drill. Cities like New York and Los Angeles present logistical problems which would stagger the imagination of a von Schlieffen. What makes the problem so difficult is the limiting time period in which evacuation must be completed.

Enemy bombers, if detected shortly after penetrating the North American continent, would be over targets in something like four hours. As air speeds increase the warning time will shrink. Evacuation time must keep pace. Today, a few hours may be adequate. Tomorrow, evacuation time must be cut to minutes.

The defeatist flatly asserts that rapid evacuation is impossible. He refuses to consider the problem serious enough to find a way to solve it. He will obstruct and drag his feet until it is too late. He will hang onto his wealth at the expense of his life, and will pull others, less blind, into the same abyss.

A city never has been impregnable. The ancient equivalent of SAC and ADC was an army on the frontiers. But sometimes those frontier armies were defeated and the city invaded. So, the city was fortified. As guns improved, walls gave way to strongpoints dispersed around the city perimeter at strategic points. Such city fortifications were common in Europe even in this century.

But the age of airpower has all but eliminated the value of city fortifications. The air above is too vast to provide any effective static defense. Moreover, the age of airpower has brought potential war to all those cities which heretofore were protected by great natural barriers, such as oceans and arctic wastes.

The wall of a modern city is its ability for rapid evacuation.

No longer can we concern ourselves with protecting the physical aspects of our cities—their treasures, buildings, streets, and facilities of all description. No longer can we afford to think of saving our own personal property and belongings. The cataclysmic power of modern munitions leaves us with but one major objective—to save our people.

Our statesmen are doing their utmost to prevent war, but the American public does not desire peace at any price. Certainly we shall never surrender. Surrender, of course, is one means to secure peace. Surrender's first cousin, appeasement, is a partial surrender which leads progressively toward abject surrender. We shall certainly try to avoid appeasement. Yet in confronting the power of Communism—a power built upon a philosophy of world domination—the risks of war are ever with us. Even though the Soviets may not want to extend their power through war, their aggressiveness may result in a miscalculation, as in Korea. And such miscalculations, together with unpredictable events which inflame passions, are the usual final causes of war. Those who fail to recognize this possibility, together with the hard facts of modern weapons, are living in a fool's paradise.

Such are those who refuse to consider seriously the problem of evacuation. Some people even think it's funny. The writer was recently house-hunting near Washington, D. C., and when he told a realtor that he wished a house some distance from the District because of the danger from atomic bombing, the agent only chuckled. To him an attack on Washington seemed so unlikely that anyone who would react to the possibility was slightly "teched." When facts lead to unpleasant conclusions people usually indulge in wishful thinking unless

(Continued on page 36)

The children understand, too, for they have been taught.

An Air Force wife accepts the occupational hazards of her husband's business. She adjusts quickly to any situation. Most of all she solemnly realizes that during the few brief minutes her husband awoke, dressed, and kissed her good-bye, the duration of a war may pass before she will ever see him again.

As quickly as the airmen prepare their bombers the wives ready their

Each SAC family keeps a pack ready for immediate evacuation. It contains food, clothing, water, first aid kit, and other items that are needed for survival.

families for evacuation, in accordance with a well-prepared plan. The first vehicles moving along the streets are the airmen going on duty. In the next surge of traffic, minutes later, are the families leaving for safe destinations—safe from air blast and radiation.

There is no confusion in the homes, for each member of each family knows exactly what to do. One airman will drive a neighbor and himself to their respective duty stations. His neighbor's car will be used to evacuate their two families. Preplanning has made this a workable solution, and the families have talked it over so no errors will occur to delay their departure.

Each family's evacuation instructions include a list of essential supplies to be taken along. These are made up into a pre-packed evacuation kit, containing food, clothing, blankets, first-aid kit, radio, etc. Everything to insure independent survival must be taken along. It might be all they will have for weeks.

As the great bomber fleet becomes airborne, the evacuees are far away and the sun rises on empty homes and vacant flight lines.

We are an Air Force family. We know how devastating atomic attack can be, probably better than people who are not in "the business." We—my whole family—must be trained and prepared for it. This, I feel, is my personal responsibility. They will be deprived of my own trained guidance for my duties will take me elsewhere. They must be prepared to survive, taught not to panic, and to recuperate after the attack as quickly as possible. They must be able to do this alone, without help or guidance. They must understand what is happening, what the effects will be, the dangers ahead of them, and the extreme hardships that they face. It is vital that we have a plan for survival.

Our plan is simple, but exacting. It is geared to meet two situations: (1) if the attack is immediate, and (2) if there is enough warning for evacuation.

If the attack is immediate we will not be able to leave our home. So we've set aside a safe area in our basement. It's continuously maintained. We picked the farthest point from the gas main and electrical outlet or main fuse box. We picked a spot that had avenues of escape through basement windows if the house should fall in.

Trunks and footlockers serve as revetments to protect us from falling timbers. Canvas covers are in place to ward off possible radiation effects. Closing the gas main shut-off valve and pulling the electrical fuse blocks is part of the routine to prevent fire or secondary explosions. These can be as deadly as the atomic blast. Our evacuation pack is stored in one of the foot lockers. In this safe area, below the nuclear blast wave, we can hope to survive. But each member of the family must know what to do and recognize the warning to act. So we have a routine practice alert, which we work into our daily life almost as a game, although a grimly serious one.

If we survive the blast, radiation hazards may become a problem. So we store overshoes when not in use, coats that will give maximum cover to the body, and sanitary face masks in the safe area. Even our Saint Bernard dog has his face mask and a place in the revetment.

If we get warning soon enough to allow evacuation our plan follows a different pattern. Transportation for the family is the first consideration. Since we are a one-car family, we double up with another Air Force family living nearby. The other officer and I alternate each week, driving to and from the base. The auto that stays at home will carry our two families to safety. The wife with the auto will collect the other family and get out of the target area on a predesignated route. Each family has its own evacuation pack, which is kept ready constantly.

Our own evacuation pack presents a special problem. My wife is a diabetic, so our pack includes a month's supply of life-saving insulin, dietetic foods, alcohol for sterilization of hypodermic needles, and the hypodermics themselves. If she survives the atomic blast, her living requirements become complicated when food and medicines are not readily available.

In addition our evacuation pack contains the essential items needed to keep alive for a minimum period of fifteen days after the attack. It will take care of my wife and children for that length of time, even if nothing more is available.

The items include:

Food, including canned vegetables, canned meats, canned fruit juices, sealed crackers, tea, sealed candies, sealed packages of dried fruits such as raisins or figs, etc., salt, sugar, flour, canned milk, cheese, canned fish, and a flask of whiskey. No food item should be included that is not well sealed to prevent radioactive dust from filtering in.

Clothing, including a complete change of personal clothing, heavy coats, raincoats, heavy stockings, gloves, extra shoes, and face masks.

Water, preferably in thermos bottles with cups. Also water purifying tablets.

Emergency type **first-aid kit.**

Flashlight with extra batteries.

Radio, battery type with extra battery.

(Continued on page 34)

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Miscellaneous items such as money, valuables, and important papers. The evacuation pack is kept at a minimum weight for easy handling and a minimum size to save space in the automobiles.

Our two families have agreed to keep our cars in good operating order and, at no time to have less than half a tank of fuel. Included in each car are road maps of the surrounding states and cities. Tire chains, a spare tire, and tools are permanently stored in each vehicle.

Each family is briefed on weather, with particular emphasis on the direction of the wind. They know how to avoid the downwind areas from the atomic blast since radioactive fall-out from the atomic cloud creates a new danger.

The family evacuation plans must conform to the local civil defense organization. Civil defense planners try to distribute evacuees, so as not to cause confusion, jammed areas, loss of control, etc. It will be the families who do not know what to do who will snarl up traffic, tend to panic, and in general place themselves and their neighbors in jeopardy.

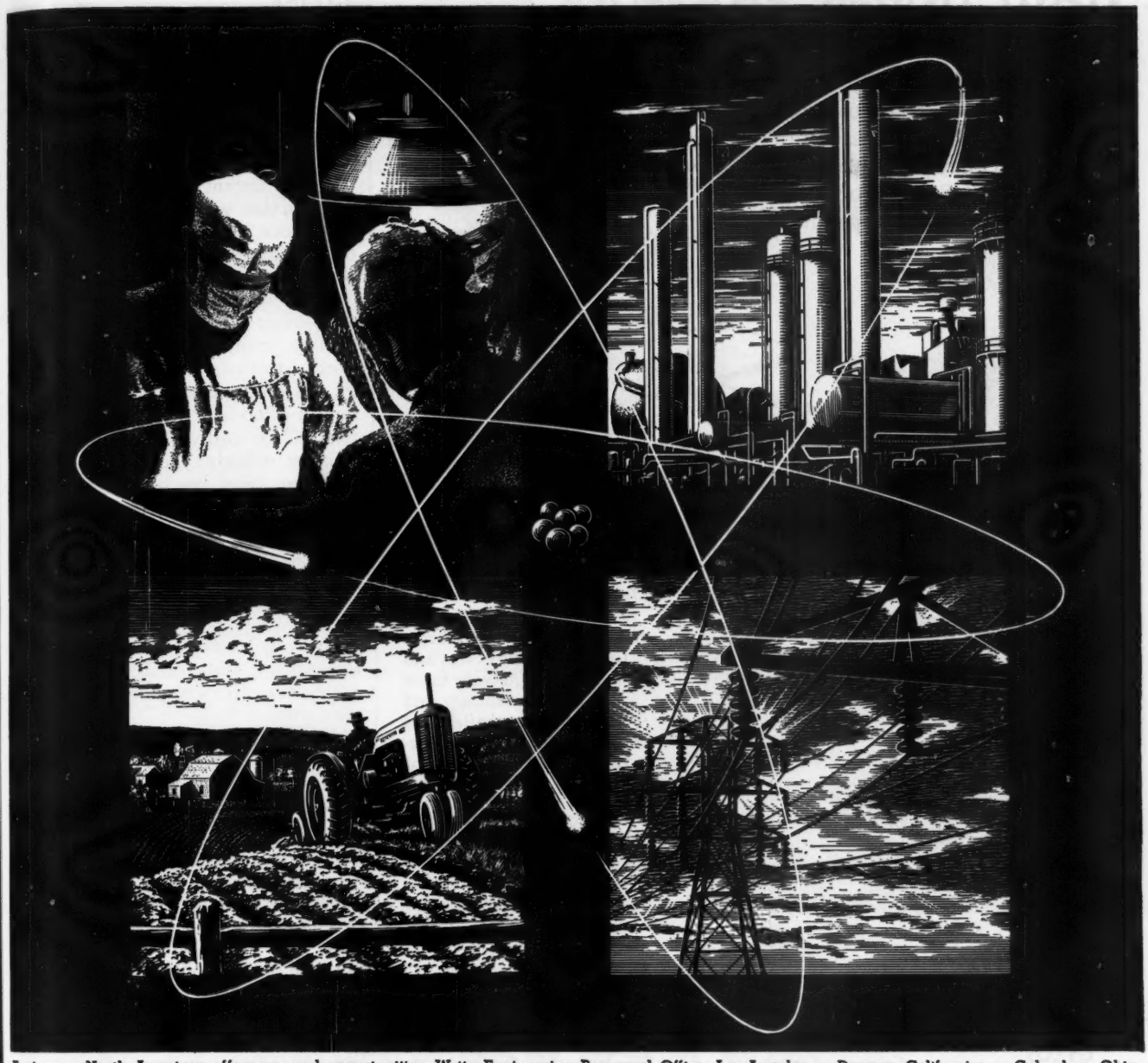
The need for preparedness is a grim reality. But the children are not frightened by a routine that is familiar. Rather they are matter-of-fact about the problem once they know the score. Their little minds are not capable of comprehending the why's and wherefore's of our preparations but they are willing to cooperate and follow orders.

Perhaps the best illustration of this was the answer I got from my seven-year-old daughter the other evening when I asked, "Dianne, what would you do if an air raid alert sounded and Mother and I were not around?"

"I would get little sister and Judge (our Saint Bernard) and go to the basement where you showed me."

"Yolanda, what would you do if an air raid alert sounded?" I put this question to my three-year-old.

Without taking her eyes from the excitement of the television screen, she said, "I'd go with Dianne."—END



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Still another example of North American's advance in this field is the "Sodium Reactor Experiment," a new reactor concept in atomic power. This development is being jointly financed by the Atomic Energy Commission and the company. From this will come many answers to the problem of producing economical electricity from the atom.

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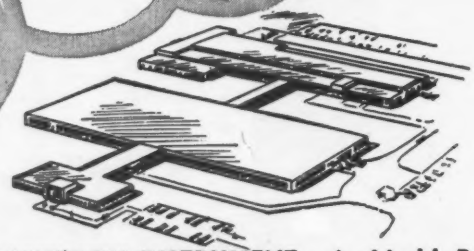

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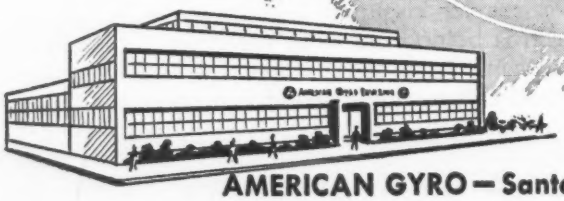

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the facts are brought home so dramatically as to force general acceptance.

But in the age of atomic airpower, the awful drama may be presented just one instant before death. Those who survive will likely be those who have been able to accept the logical truth, however distasteful, and who have been willing to abandon their earthly possessions in order to save their lives.

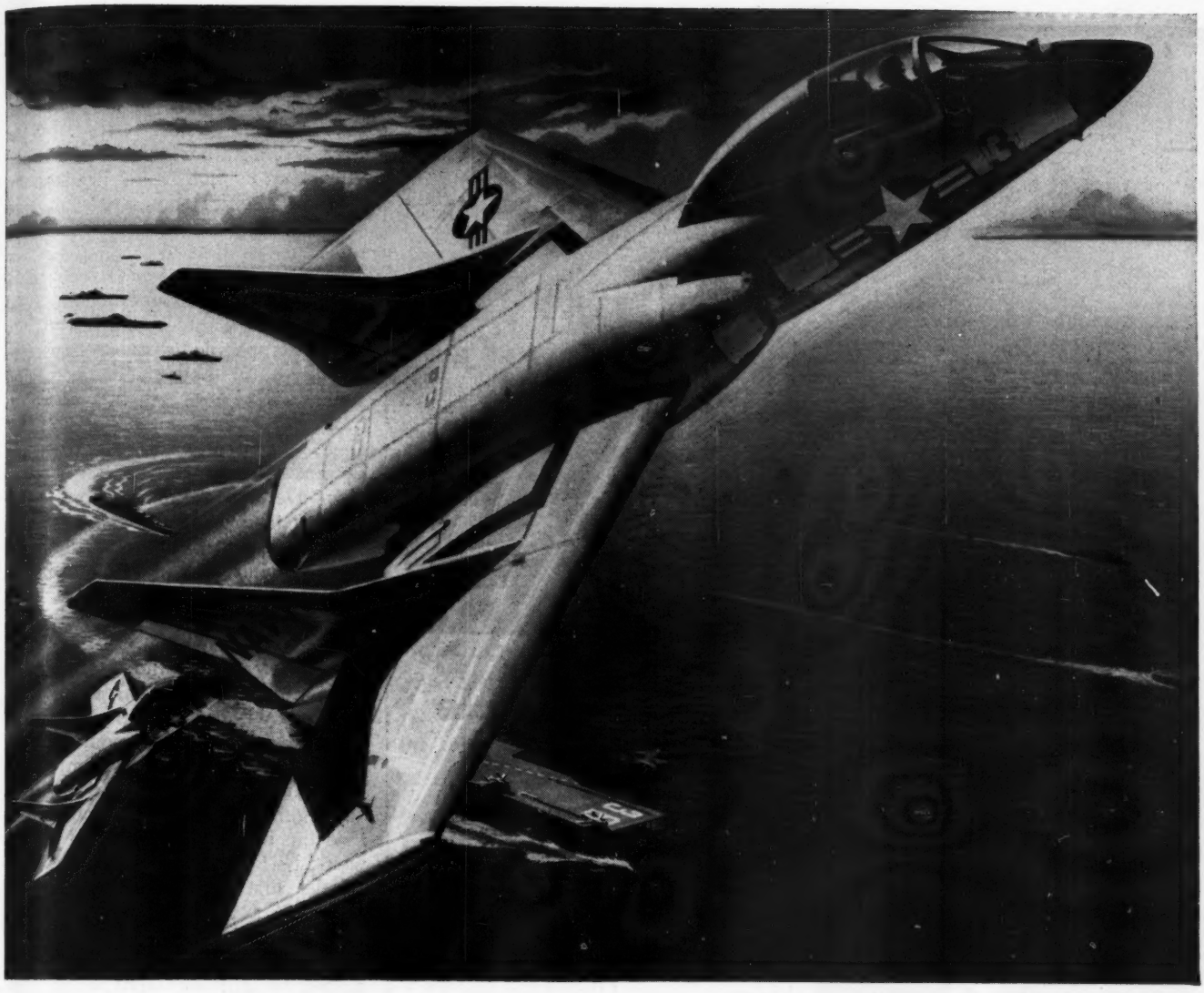
How many Americans will cling blindly to their property in the cities by resisting evacuation preparations until it is too late? Even the preliminaries will be costly. The first full-scale exercise will shut down trade, transportation, and production for probably a full day. One can only guess at the expense involved, but it will probably run into millions.

Exercises will reveal transportation bottlenecks. New high-speed arteries, bridges, and tunnels probably will have to be built. This will compound the expense, but provide some peacetime return by improving daily traffic circulation.

If an individual can travel at sixty miles in one hour on a turnpike, certainly one-way exit channels can be developed for a whole population to travel simultaneously. No stop lights need slow the flow of cars, because all cross-traffic would merge into the one-way arteries. A wide street could accommodate four lanes, with something like 4,000 cars per hour passing one point. With five people in each car, 20,000 people would pass that point in one hour. Twenty such exit arteries would move something like 400,000 people in one hour. More exits would reduce congestion and speed the flow. Nor does this consider the thousands which could be moved by train. There seems to be no valid reason why any city could not be completely emptied within four hours with a well drilled plan. The foot-draggers will observe that by the time we can learn to evacuate within four hours, the speed of aircraft will have mounted so that four hours warning is impossible. What will we do then?

As the period of warning gets shorter, the population of a city may have to evacuate largely by air. The technique of glider pick-up is well developed. People could board gliders stationed on roof-tops and in streets. When loaded they could be snatched up by the nylon cords of tow planes at over a hundred miles per hour. Personal helicopters are not far around the corner, and new light planes have

(Continued on page 38)



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already been developed which can take off from streets. Indeed, by the time a ballistic missile is developed which can fly 5,000 miles in one hour, people in cities should certainly be able to disperse a dozen or more miles in less time.

Some people look at secondary problems arising from evacuation and find them insoluble. Suppose a city spews its people in every direction. How would they live? Food and shelter would not be readily available. What would happen to the sick, the aged, the infants? True, there would be great hardship, but the Federal Civil Defense Administration is beginning to provide dispersed medical supplies and has plans for many assembly points with food, blankets and shelter. The alternative to this hardship, however, is the high possibility of death if we remain in a city under attack. Certainly the decision to evacuate and face the hardship should be taken without hesitation. One can live for days without food, but not for an instant under an H-bomb blast.

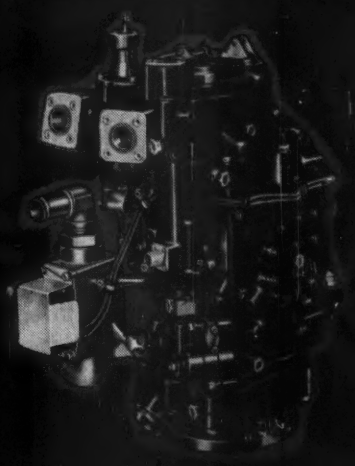
Probably the most uninformed of all arguments against evacuation is that the bomb may miss and people would be better off if they stayed put. In the first place, a blind baboon could hit a given city with modern bombing equipment. A gross error, through equipment failure or damage caused by our Air Defense, is a remote possibility, but certainly nothing upon which we can plan. It is impossible to be completely secure in this life, but we live longer by avoiding the obvious dangers and abiding by the laws of probability. For if a bomber reaches the bomb-release line, he will probably hit his target.

Civil Defense studies have shown, moreover, that evacuation disperses the concentration of people and will reduce bomb casualties even under a miss. Finally, if one is still concerned about a miss, it might be comforting to consider that there are 360 degrees in a circle and the miss could be in any direction.

Should general war come, we can hardly expect SAC to destroy every enemy bomber on the ground. Nor can we expect our fine Continental Air Defense Command to stop every invader. What do we do about those which get through?

We must build the modern walls of a city—an ability to evacuate rapidly. The bombs that drop can destroy the structure of a city, but they cannot destroy the heart and soul of a city if the people are saved. People can build better cities.—END

Right from the START !



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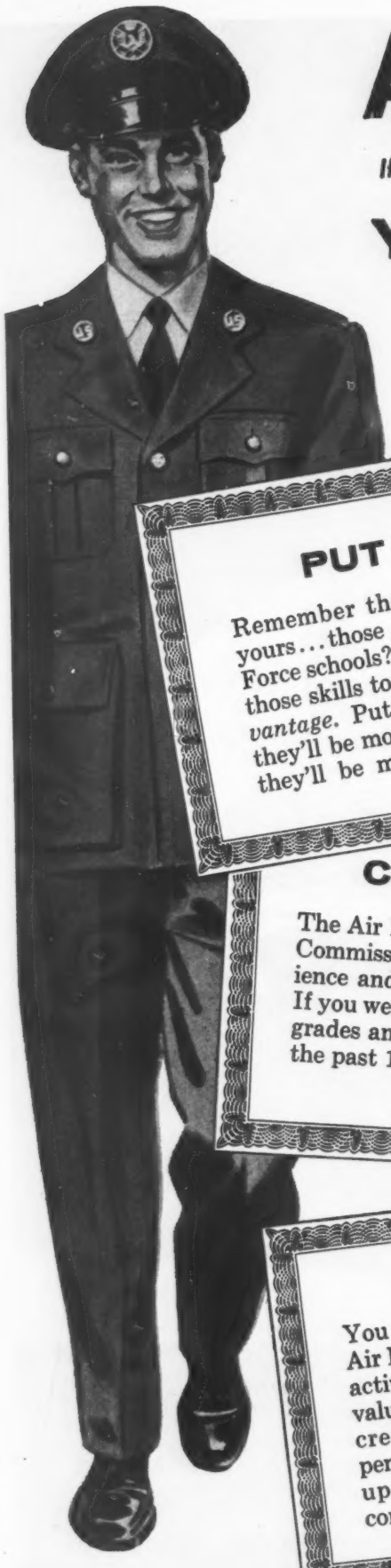

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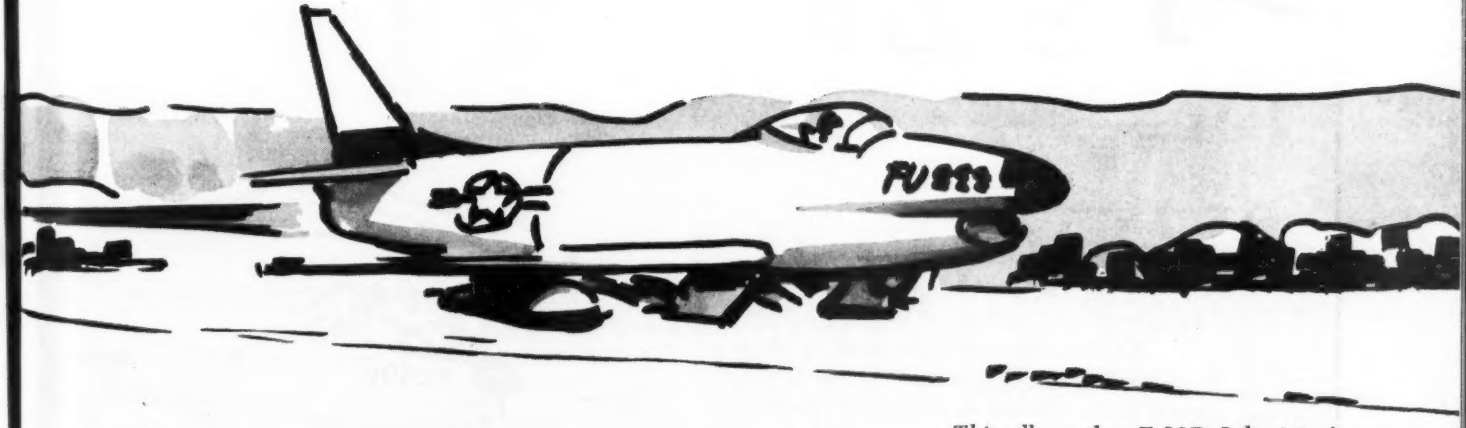
YOU GO PLACES—FASTER

as an airman in the

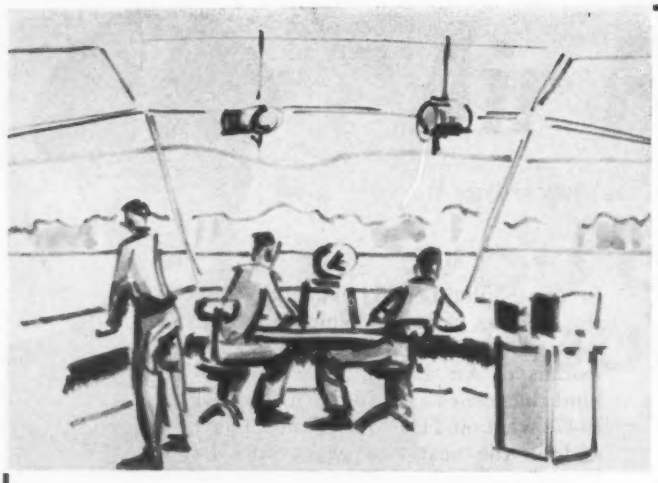
U.S. AIR FORCE

In our September '54 issue, through the sketches of Stokes Walesby, a staff artist of the *Baltimore News-Post*, the readers of AIR FORCE got a look behind the scenes as a SAC Squadron of B-47s went on TDY to England. Below and on the next two pages are Mr. Walesby's impressions of a more recent trip he's made—to Landstuhl Air Base, Germany. Based here, near the Iron Curtain, is a typical USAF all-weather outfit, the 440th Fighter-Interceptor Squadron. Its job: a constant alert against aggression. And here's how the men of the 440th live and work.

SABRE DOGS OVER GERMANY



This all-weather F-86D Sabrejet of the 440th Fighter-Interceptor Squadron is only minutes away from the Iron Curtain as it roars into the air at Landstuhl Air Base in Germany.

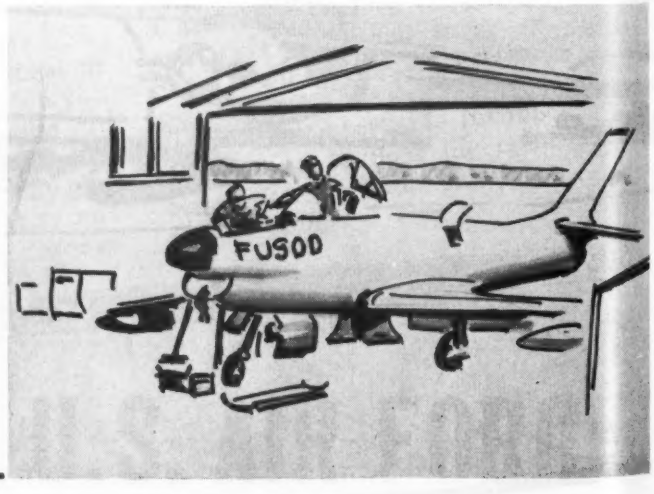


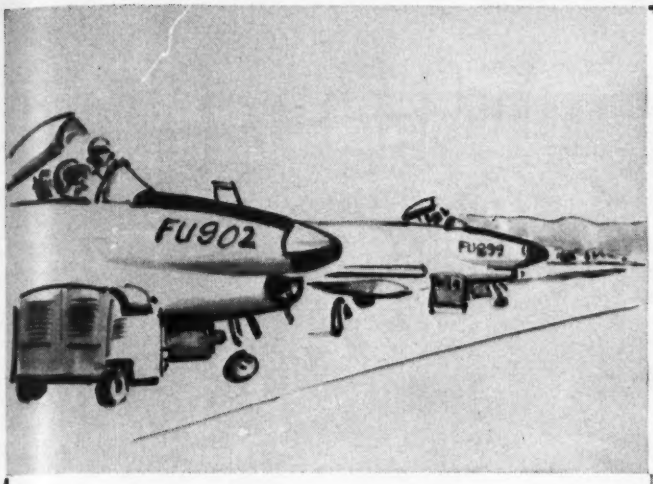
Just as at other Air Force bases, the Landstuhl tower is one of the busiest spots on the field. The jets at the field get priority on take-offs and landings because of the way they eat up the fuel.

Operations is the "nerve center" of the squadron. The men drop by to get the latest "poop," for flight clearance, and to scan the board for flight information.

The entire rear section of the Sabrejet is removed to make the after-burner and rear portions of the engine accessible for maintenance and adjustment by skilled mechanics.

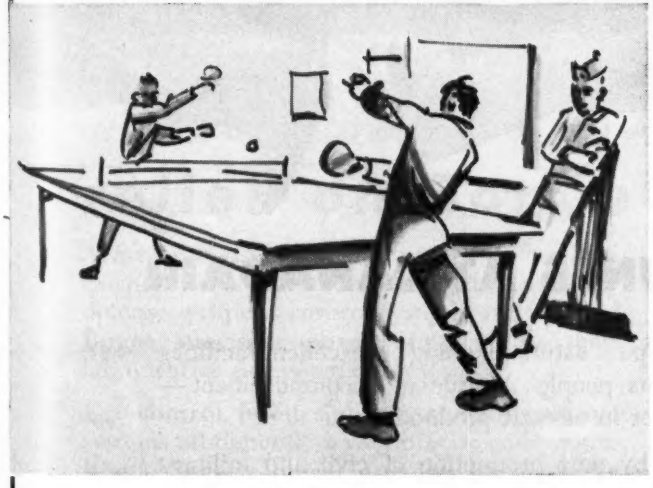
The complex radar brain of the F-86D puts the "all" in "all-weather fighter." Keeping this vital equipment in shape calls for the "know-how" of thoroughly trained electronics technicians.





Pilots sit in the cockpits in full flight gear, and jet starters stand by the F-86Ds on the five-minute ready line. No warm-up is needed, so pilots can "turn 'em on and go."

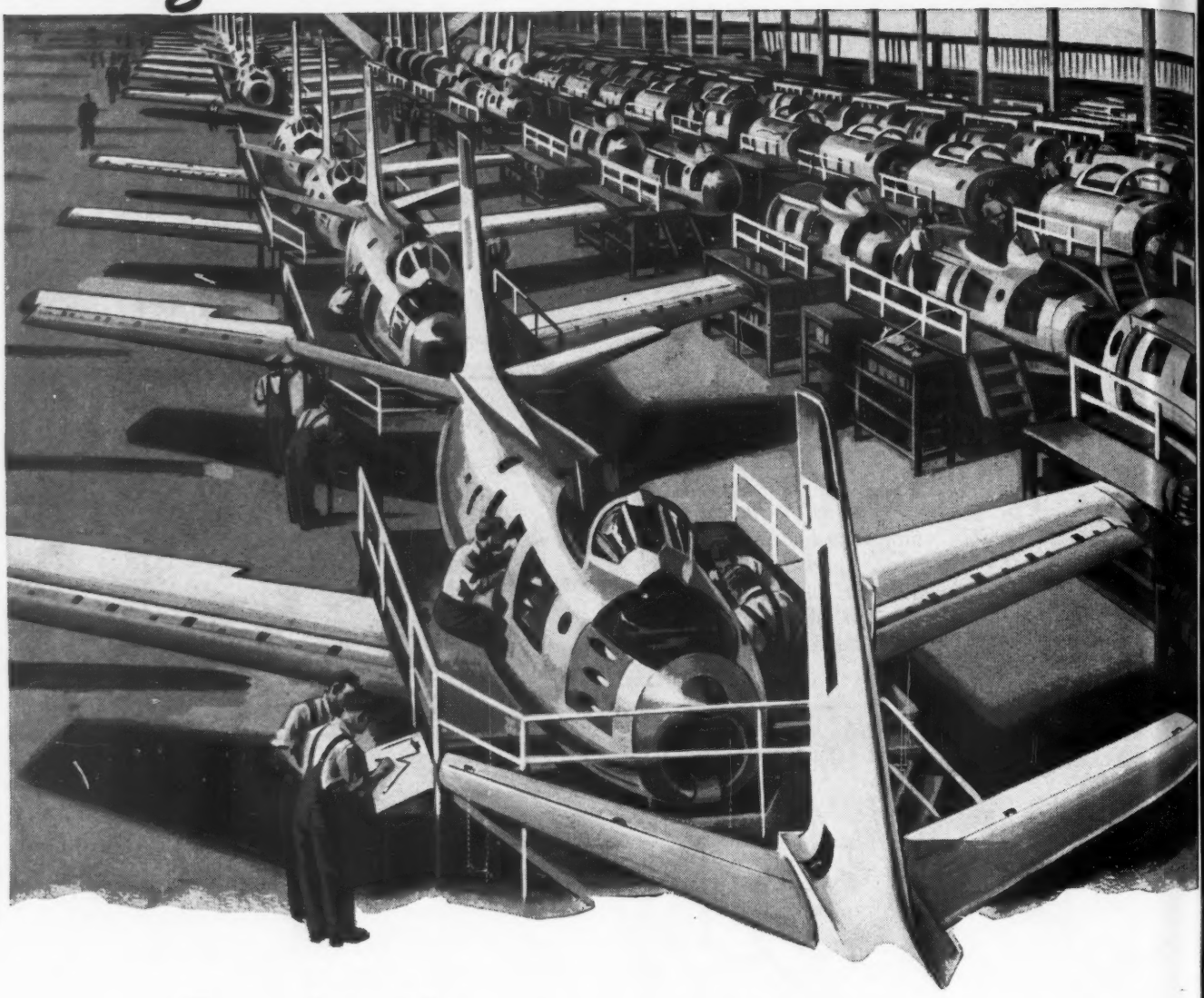
"Club 21" is typical of the little huts built alongside the parking areas of their Sabrejets by the enterprising ground crews at Landstuhl.



There's nothing like a fast game of ping pong to keep a sharp edge on the reflexes. One of the favorite pastimes around the ready rooms, it attracts the usual kibitzers.

Thirty-minute stand-by in the ready room gives the crews a chance to relax and catch up on some reading. Helmets and parachutes hang on a rack—always available for an alert.

A Single Goal...



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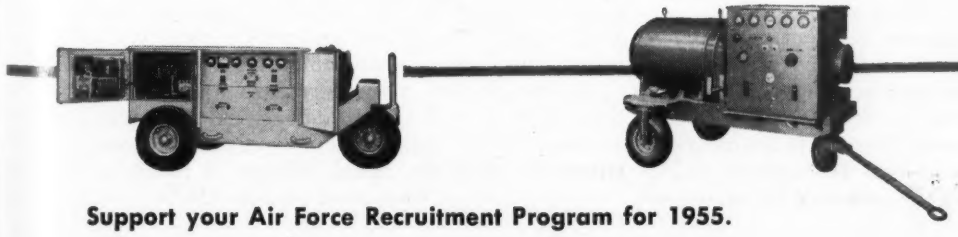

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SAC. In addition, many measures suggest themselves for minimizing the vulnerability of US airpower to Soviet attack. SAC can be operated from the US using overseas bases for pre- and post-strike staging. The number of tactical aircraft in the West European theater can be held to a minimum, with the bulk of tactical airpower located at air bases within once-refueled radii of action of the potential combat area. Simultaneously, we must exploit fully the several technological advances which promise much better take-off and landing characteristics for tactical aircraft, thus permitting wide dispersal to the hundreds of smaller airfields already available throughout the world. Beyond this, "ready-reserve" aircraft, kept in dispersed locations, can be used to replace early combat losses.

US vs. USSR in a Counter-Economy War

A future war, with unrestricted use of nuclear weapons in counter-economy strategic bombing campaigns, can end only in destruction of both sides. It would be folly to assume that symmetry in counter-economy bombing will not exist during the nuclear age, when the number of bombs required on target can be measured in hundreds. It is of little consequence that we have the nuclear stockpile capability of destroying Russia several times, if Russia simultaneously has the capability to destroy us just once. This she can have with a reasonable investment—an investment she is obviously making. Even worse, the counter-economy situation will become highly asymmetrical in favor of the Soviets (even when they still have a "limited" number of bombs and bombers), because they are subject to fewer political constraints in starting a war, and because of their superior capabilities in intelligence. Furthermore, should the Soviets develop a ballistic missile delivery capability before we do, counter-economy deterrent strength could shift heavily in their favor.

An exchange of blows resulting in millions dead and devastation of a large portion of our industrial and urban complex would endanger our national objective of preserving democratic concepts and institutions. This basic inconsistency between national objectives and unrestrained counter-economy warfare under conditions of *US-USSR strategic nuclear symmetry* demands that we explore objectively any alternative, war-winning strategies which minimize the prospects of an automatic exchange of counter-economy nuclear attacks.

There are two very good reasons why we should concern ourselves with broader air strategy than that based too rigidly on the decisiveness of the counter-economy campaign. First, with symmetrical US-USSR counter-economy capabilities, the "Sunday punch" is not likely to be decisive. Secondly, we should not rule out the possibility of a political decision staying the delivery of the "Sunday punch." Facing up to these possibilities, we must exploit fully all elements of air-atomic power to prevent even greater emphasis on the conventional ground-orientation of our strategy. For the nation, this is a *must*, because we will lose any future war unless we counter Soviet superiority on the ground, and the only effective and economic way proposed for doing this so far is through air-atomic power.

Suggestions for employing airpower in other than the classical strategic role have not been seriously considered since World War II, and too often have been lightly turned aside by the cliche: "Oh, you want to return the battle to the battlefields." Possibly this happens because JCS strategy is too heavily influenced by World War II thinking, and because this was true even during the period of US atomic monopoly. During this period, the Air Force considered it rank heresy—and correctly so—to have the slightest doubt cast upon the validity of the classical tenets of Douhet and Mitchell. Therefore, it is small wonder that the dynamics of the nuclear age and the significance of the passing of our atomic monopoly have not been fully appreciated, and that old concepts of airpower continue to be rigidly embraced. Much broader horizons are now open to US air-atomic power and through their exploitation the devastation of counter-economy nuclear war can hopefully be avoided.

There can be no guarantee that the USSR will not attack the US economy first. They will undoubtedly have the initiative, and it would be sheer folly to rely on any agreement with the Russians to refrain from bombing cities. Hence, there will be an over-riding need for a US strategic force with such unquestionable capability that the Soviets will have no room to speculate about the outcome of launching a surprise attack against the US economy. This requires that we maintain a strategic force, relatively invulnerable to enemy offensive or defensive airpower. It also requires that we exploit fully alternative delivery capabilities for striking the Soviet economy.

The Soviets must never be tempted to strike SAC and the US economy on the assumption that SAC is highly vulnerable and, if SAC is destroyed our total capability to retaliate will have been eliminated. In other words, SAC, TAC, or in fact *all* offensive US airpower can and should be flexible enough to do a variety of jobs, including counter-economy strategic bombing. This is the only effective and practical way of standing down SUSAC, the Russion counterpart of our Strategic Air Command.

A counter-economy strategic bombing campaign will have a noticeable effect on well-stocked Soviet forces-in-being only six to twelve months after the outbreak of war. In this event, the counter-economy mission will have a relatively small effect on the Soviet tactical air-ground offensive. If Western Europe is occupied, and its political and intellectual leadership purged by the Soviets, we will then be faced with the necessity of "liberating" and "governing" it in the World War II sense of the word. Clearly, this would be impossible in the event counter-economy blows are exchanged since there would be no healthy US economy and some millions fewer people in the US to use in mounting a new expeditionary force. Furthermore, in the face of an enemy atomic capability, Normandy-type invasions are doomed to failure. Thus, although the US would not necessarily have "lost" the war, we would be in no position to win it militarily. And with Western Europe lost to us, the long-term political and economic factors would strongly favor the Soviets.

These possibilities point up the indecisive nature of a counter-economy campaign against the Soviets, when they can do the same to us. Furthermore, there is always some risk that, faced with devastation in the event of a nuclear war, the Soviet leadership may prefer the risk of national suicide if counter-economy bombing were to leave *both* sides with their economies destroyed, but the Soviets in control of Western Europe—a better prospect for the elite than certain defeat. Clearly, we must search for—and prepare for the transition to—an air strategy which provides maximum hope of avoiding the devastation of our cities and the mass loss of life, and which gives Western Europeans some hope of reasonable defense and survival.

As the Soviets achieve *strategic* nuclear sufficiency, their large ground armies and tactical air forces could, in a conventional military sense—unless we counter them effectively—shift the world balance of power in favor of

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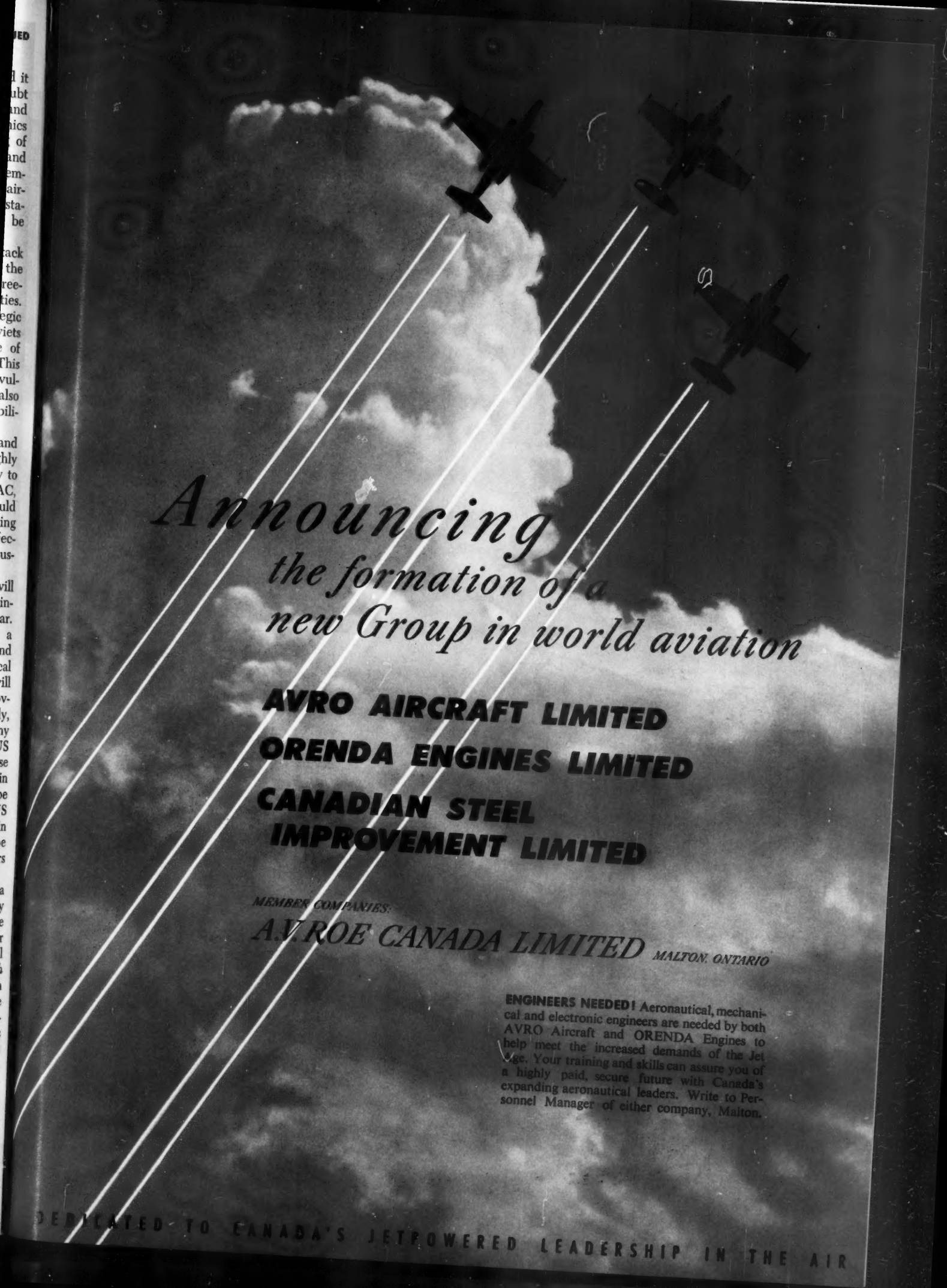
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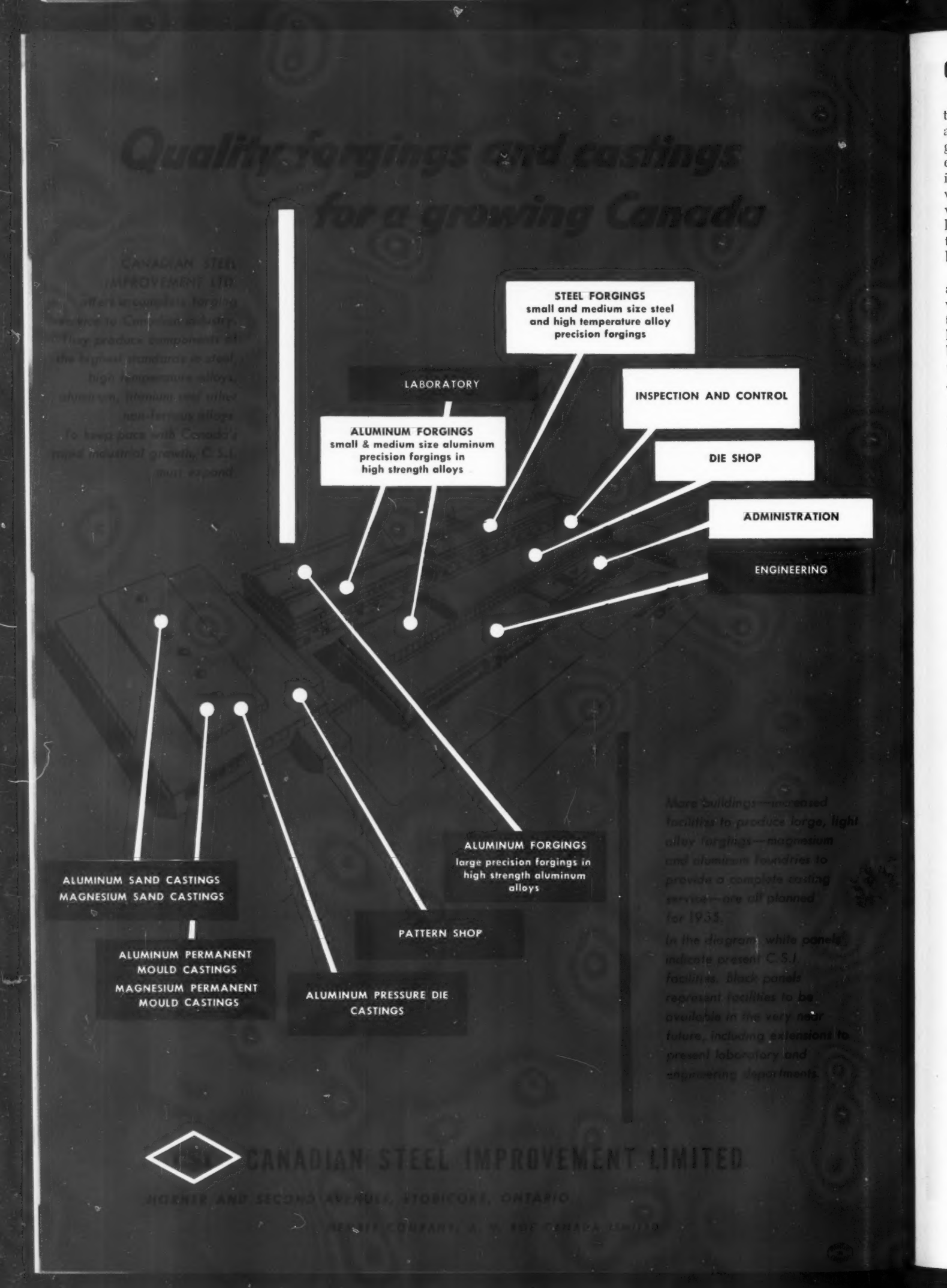
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LABORATORY
INSPECTION AND CONTROL
ALUMINUM FORGINGS
small & medium size aluminum precision forgings in high strength alloys
DIE SHOP
ADMINISTRATION
ENGINEERING
ALUMINUM FORGINGS
large precision forgings in high strength aluminum alloys
ALUMINUM SAND CASTINGS
MAGNESIUM SAND CASTINGS
PATTERN SHOP
ALUMINUM PERMANENT MOULD CASTINGS
MAGNESIUM PERMANENT MOULD CASTINGS
ALUMINUM PRESSURE DIE CASTINGS

the Soviets. With devastating punishment aimed at the US and NATO countries, the Soviets will be in a strong bargaining position to press for agreement to refrain from employing nuclear weapons. Furthermore, having the initiative, the Soviets might refrain from using nuclear weapons and simultaneously announce that city bombing would be resorted to only in retaliation. In the face of a known Soviet nuclear capability, it is highly unlikely that the Allies would, except in a dying gasp, initiate city bombing.

The possible courses of events outlined above would appear to favor the Soviets, with their large edge in conventional ground armies and tactical air forces. However, the reverse is possible if the US takes full advantage of its large stockpile for mass employment of nuclear weapons by both tactical and strategic air forces against Soviet military forces-in-being and their direct supporting elements. A large and potentially decisive military advantage accrues to the US in counter-military force operations because of a larger nuclear stockpile; the probability of a greater variety of proven weapons and delivery systems; and a variety of proven delivery tactics and techniques. These advantages can and must be maintained for many years, and they can be militarily decisive during this period. This US counter-force nuclear capability enables us effectively to overcome the Soviet advantage in numbers of conventional ground and tactical air forces.

The US has already publicly announced a policy of reliance on massive retaliation in the event of any overt military aggression fomented by the Soviets. This announced policy goes far toward deemphasizing Soviet-inspired movements to outlaw the use of nuclear weapons completely.

As our counter-force capability becomes really formidable, the US will have both the option of choosing and the initiative of announcing a policy to employ nuclear weapons *primarily* against military targets. How such an announcement should be made and, indeed, whether it should be made at all, presents questions and issues of great complexity. Certainly, any announcement should leave us the *choice* of using or not using nuclear weapons, according to the contingencies.

However, the Soviets certainly will not "hold still" while we establish the ground rules for war to suit ourselves. For example, they might suddenly accept a "reasonable" atomic disarmament plan. Or, the Soviets might threaten that *any* use of nuclear weapons *anywhere* by us will be countered by a blow at our cities or the cities of our allies. This entire matter urgently needs study and consideration at the highest policy levels. Our basic objective should be to maximize the *additional deterrent value* of our counter-force capability, while capitalizing on its political and psychological aspects to rally the free and neutral nations to our side.

Counter-Force Operations

This article has discussed the situation which could exist when Soviet *strategic* nuclear sufficiency provides them with a counter-economy capability symmetrical with that of the US. It has also suggested that US *military* nuclear sufficiency, plus technological changes in aircraft and weapons, might be exploited to prevent a potentially disastrous shift in the world balance of power in favor of the Soviets. In the discussion of a *counter-force nuclear capability* which follows, *these three points* should be clearly understood and kept in mind:

- A counter-force capability is proposed as a *major and war-winning role* for US offensive airpower instead of, as generally held in the Air Force, a secondary role to the counter-economy mission.
- This article makes no proposals to diminish the importance of the strategic counter-economy capability. To the contrary, such a capability continues to be vital to this nation's survival. However, this paper does argue that a strategy to bomb the Soviet economy immediately at the outbreak of war will not be in the nation's best interest for very much longer. When the Soviets approach nuclear *strategic* sufficiency, US nuclear *military* sufficiency supporting a counter-force strategy will become the key to the early achievement of a dominant military position *vis-à-vis* the Soviets.
- This paper makes no proposals to diminish the importance of SAC. On the contrary, SAC's capabilities must be continually increased, with emphasis on training, targeting, and flexibility of equipment to enable SAC to carry out either counter-force or counter-economy operations.

Combat forces, lines of communication, and supporting supplies constitute the principal targets for attack and destruction. Before commenting specifically on this target system, it should be made clear that the use of nuclear weapons makes it difficult to distinguish between military and counter-economy targets. For example, major air bases are frequently located near cities; troops can be concentrated in cities; and submarine bases are associated with major seaports. Thus, even counter-force operations will inevitably lead to some destruction of Soviet cities. Furthermore, this situation presents especially difficult targeting problems when we contemplate using nuclear weapons against counter-force targets in Central Europe. Nevertheless, these targeting difficulties should not distract us from the basic objective of winning any war *primarily* through the destruction of enemy forces-in-being.

The targets of highest priority among offensive enemy combat forces are those intended for the air delivery of nuclear weapons. The fact that combat aircraft spend some ninety percent of their time on the ground, that they require servicing by highly skilled and trained personnel, and that they require certain fixed ground facilities, render air installations particularly lucrative targets to attack by nuclear weapons. Furthermore, the fixed nature of air installations permits the targeting and planning for their attack prior to the opening of hostilities.

The destruction of the enemy's air force is the essential prelude to the large-scale attack of his ground forces. The Soviets habitually employed massive attack formations in World War II. The centralization of authority and distrust of the initiative of smaller unit commanders in the dictator society of the Soviets may influence them to continue reliance, at least *initially*, on massive ground attacks. Air Forces armed with enough nuclear weapons can now destroy such ground forces—quickly and completely. After—or perhaps, even before—an anti-ground force atomic capability has been demonstrated, dispersal in both frontage and depth will be used to reduce vulnerability, but this will introduce serious problems of control and great losses in *striking power*. Hunter-killer, air-ground tactics—utilizing small, highly mobile, airborne forces—can and must be devised to force isolated enemy ground units either to remain dispersed, immobile, and ineffectual, or to concentrate and present lucrative atomic targets of opportunity.

The Soviet submarine force will undoubtedly engage heavily in interdiction of our sea lines. Their employment for closing important allied seaports with atomic torpedoes and for launching guided missiles with nuclear warheads against targets in the continental US is also a distinct possibility.

(Continued on following page)

Like aircraft, submarines are difficult to locate, combat, and destroy when operating in their own medium. Also like aircraft, submarines require elaborate home bases, spend a large fraction of their time in these bases, and require highly trained and skilled personnel for their operation and maintenance. These submarine bases are tough targets, so that the fissile material requirements per target are quite high. This is counted-balanced by the fact that these targets are relatively few in number and their destruction rapidly reduces the number of enemy submarines on patrol.

The logistics and communications systems necessary to support and give mobility to ground forces present targets of high military value. For example, a concentrated and thorough atomic bridge demolition program can so interfere with the mobility and re-supply of Soviet forces in Europe as to seriously reduce their effectiveness and create concentration of troops in the more rearward areas. Again, the destruction of the enemy's skilled engineer troops through timely re-attack of bridge sites constitutes profitable employment of tactical air-atomic capability.

There is general agreement that atomic strikes against known fuel production facilities can have little effect in blunting the initial onslaught of a Soviet attack. They can have only a relatively long-term effect. However, the larger fuel storage sites nearer the combat zone are important targets for initial atomic attack. Munitions and supplies are so readily dispersed and camouflaged and their vulnerability is so low that their attack with atomic weapons is of doubtful profit. However, destruction and abandonment of munitions and supplies coincident with nuclear attack of troop targets is likely to be a major bonus.

Counter-force operations enormously increase the requirements for combat intelligence, especially intelligence of a highly timely character. Top priority must be accorded the vital *fixed* elements of the enemy's force-in-being (aircraft and submarine bases, major stocks of nuclear weapons and fuel, specialized maintenance installations and personnel, etc.). Intelligence that will give one to three days of warning of the imminence of an attack is a close second in order of importance. Economic intelligence (plant characteristics, production data, capital and labor force concentrations, etc.) remains necessary. Finally, means are required to assess properly and rapidly the political and psychological effects of air-atomic threats and strikes.

Timeliness and "area" surveillance, rather than "precise" target detail, are the prime requisites. Thus, high reliance will be placed on air reconnaissance as the instrument of combat intelligence. The anticipated tempo of air-atomic operations places a premium on a night/bad weather "recce" capability, on low-altitude operations under cloud cover, and on rapid reduction of raw recon data to useable form (weapon selection information and target coordinates) for immediate strike decisions.

Vigorous and properly-oriented exploitation of current technology can rapidly provide the means for meeting the intelligence-reconnaissance needs of the nuclear age.

Based on what has been said so far, it is now possible to summarize American airpower requirements. First of all, America must be strong in its own right and must be able to project some of *its* retaliatory power from well defended bases on this continent. However, granted that an intercontinental strategic capability of some magnitude is vital to this country's survival, it is no longer of itself sufficient to guarantee our long-term security. Furthermore, in the long term, airpower based in America alone *can be* impaired by military and political vicissitudes in other parts of the world. After all, if we depended solely on a long-range striking air force, we would be leaving the whole eastern hemisphere open to eventual Soviet domination. The balance of world resources, including trained manpower, industry, and strategic materials, would then heavily favor the Soviets, and our eventual defeat would be merely a matter of time—unless we were to initiate preventive war, which has been ruled out as a policy for the US. Therefore, we must have *both* adequate long-range airpower—based in the US—to retain reasonable independence of action and to keep from being "shaken-down" economically by our Allies, and adequate shorter-range airpower—based on Allied territory—to keep the Soviets from blackmailing our Allies and eventually capturing a major fraction of the world's resources.

However, to be effective, NATO tactical airpower must rest on secure bases. And the West European countries must provide the assurance that neither parliamentary debates (Communist members participating) nor Communist sabotage will inhibit Allied tactical atomic airpower at the moment the Soviets attack.

Lest these views be misunderstood, two points should be made clear: First, SAC's long-range offensive capability is vital to our survival. SAC's budget should, if anything, be increased. Second, powerful shorter-range (tactical) land- and sea-based air-atomic power, a supporting air logistics system, and highly mobile ground units, have become equally vital and here the budgetary deficiency is even greater. The dangerous fiction that nuclear weapons drastically reduce requirements for aircraft should be dispelled, for it is the size of the enemy's air force—not the type of bombs we will both use—which must primarily determine the size of our air arm. Soviet combat aircraft now number appreciably more than those of the West; and our marginal and fleeting qualitative superiority (supported by an inadequate air research and development budget) is too slender a reed upon which to base the serious risk of being outnumbered in the air.

A counter-force strategy in the nuclear age stands in sharp contrast to the present World War II and "age of atomic monopoly" influenced strategy, which emphasizes the US mobilization base, and the SAC counter-economy "Sunday punch"; also to the Fortress American strategy which places heavy emphasis on air defense; and to the completely unrealistic and impractical strategies based on various atomic disarmament proposals. Many advantages of the basically counter-force strategy, summarized below, are either partially or totally lost under other approaches to national security.

Advantages of a Counter-Force Strategy

Of course, we should frankly recognize that the Soviets may choose *not* to fight a counter-force war. If this should turn out to be the case, nothing is lost by adopting the counter-force strategy ourselves. In the first place, SUSAC remains as the highest-priority target under both the present and the counter-force strategy. Secondly, the tactical atomic delivery capability which we develop for counter-force purposes can also be used for strategic bombing. Furthermore, the counter-force strategy gives us clear gains in the cold war and local wars. Finally, there is always some chance that our counter-force strategy may cause the Soviets to refrain from attacking our economy massively at the outset.

The other strategies noted above are frequently at cross-purposes with national principles, aims, and policy objectives. These strategies fail to recognize that the current

(Continued on page 82)

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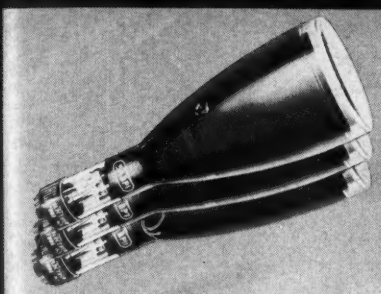

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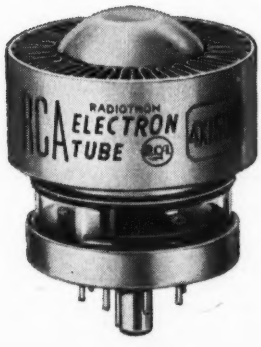

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THE NEW HISTORIAN ARRIVES

With a few intelligent hints and information culled from the wastebasket you, too, can write a history

There it was. A large oak door with gold lettering on the upper panel: HISTORIAN, painted in a feeble attempt at Old English script. Knocking once, sharply and confidently, T/Sgt. C. Wyatt Russell, USAF, entered without invitation.

The office was so cluttered with newspapers, books, and filing cabinets that it seemed smaller than it actually was. Behind the largest of the three desks, with an imposing row of baskets before him, sat a sharp-faced Air Force captain.

The clack of a typewriter caused Sergeant Russell to turn from the captain and glance at the second desk. The typist, a plain woman with lusterless brown hair and wearing gold-rimmed glasses, didn't look up.

"Well, Sergeant?" The captain frowned slightly at the interruption.

"Sergeant Russell reporting as the new historian, sir." The captain smiled as he returned Russell's salute.

"Good. Who sent you over—Personnel?"

"Yes, sir."

"That will be your desk over there," the captain pointed, "and after we go over your duties a little bit, you'd better get to work. We're way behind."

"Yes, sir."

"First off, have you had any experience with history?"

"No, sir. I was in the infantry, and I just reenlisted in the Air Force."

"What kind of work did you do in the infantry?"

"Platoon sergeant, sir. Rifle platoon."

"Oh? Why'd you change branches of service?"

"Too old for infantry, sir. I'll be twenty-nine my next birthday."

"I suppose you're right. Twenty-nine is much too old for the infantry."

"Yes, sir."

"The requirements for a historian are varied, Sergeant, but if you didn't meet them, I don't imagine Personnel would have sent you over.

"An Air Force historian should have native curiosity, initiative, honesty, objectivity, and a critical personality coupled with enthusiastic tact and discretion. These qualities can be acquired, however, and if you don't possess them at present, don't fret. You'll achieve them in good time."

"Yes, sir."

"Next, thorough training and experience in history, social science, disciplined research, and writing are essential. You should know the technique of locating, analyzing, evaluating, maintaining, and interpreting in a written narrative, a sound, well-documented history. What was your major in college, by the way?"

"I never went to college, sir. Just the eighth grade."

"Never mind. Objectivity and cold accuracy are more important than background at times, although you'll have to work quite a bit harder. You must keep uppermost in your mind that history is not written for history's sake, but it must have an ultimate motive of its own, and for the Air Force. If man doesn't understand the past, he cannot evaluate the present and, of course, the future."

"Yes, sir."

"Now, let me show you our reference library." The captain got up and opened a small door in the wall. Sergeant Russell followed him into a large room. Thick volumes were stacked from floor to ceiling on all four sides of the room. Several unopened packing cases filled the center of the library.

"There are something like ten thousand books here," the captain said cheerfully, "but unfortunately, they aren't catalogued yet. As an additional duty, you'll have to get around to that in your spare time. Shelves would be nice to have, too. And card indexes must be made. . . . Did you ever work in a library?"

"No, sir."

"Never mind. It's merely a secondary duty. Let's go back to the office."

"Yes, sir."

At his desk, the captain drummed his fingers on the glass top for several moments before he continued. "This is a very large headquarters, Sergeant, and I cannot overemphasize objectivity. Most of your information will come from documents, but you must also attend all meetings, conferences, and mission interrogations. Listen to everything, but believe nothing. And always remember, the janitor is the historian's best friend. Do you think this is funny?"

"No, sir. I wasn't smiling, sir, it's my lip. It's got a kind of a twitch. . . ."

"Well, pay no attention and maybe it will go away. The last historian had a similar twitch, only it was his right eyelid. Most disconcerting."

"What happened to the last historian?" Sergeant Russell asked anxiously.

"You must be especially cautious in the way you handle secondary materials," the captain continued, ignoring the question. "You must watch for personal bias and predetermined conclusions."

"Yes, sir."

"But on the other hand, carefully prepared, critical secondary materials may be more valid than defective primary materials."

"Yes, sir."

"Oh, yes, the janitor. The last historian had an arrangement with the janitor whereby every single scrap of paper from each wastebasket in each office was brought to him each evening. Naturally, the historian had to correlate these, but you will be astounded by the many relevant scraps of data he picked up this way."

"What sort of stuff did the janitor look for?" Sergeant Russell asked, mildly interested.

"Anything at all. It doesn't make any difference what the janitor brings: notes, memos, used carbon paper, anything. You, as the historian, will determine the value."

"Yes, sir."

"If you slip the janitor five bucks now and then, it will pay off. I'll see that you are reimbursed from the Central Welfare Fund at the end of the fiscal year." The captain winked.

"Yes, sir."

"It's quite possible that certain directorates from time to time will attempt to slip spurious documents into their wastebaskets. Be on your guard, and don't, under any circumstances, be taken in by these desperate measures."

"I'll watch for them, sir."

"Fine. But don't forget the trivial and so-called transitory items. They lead to greater findings. Scan all documents carefully. Printed and formal matter, graphic and statistical matter, as well as files of day-to-day business are as valuable as first-hand items, such as documents and correspondence."

"Yes, sir."

"And never ignore a rough draft. Often the rough draft will have the true meaning of what its author meant to say." The captain paused, interlaced his fingers behind his head and stared at the ceiling, lost in thought.

"Excuse me, sir," the sergeant asked politely, "but just exactly what are my duties?"

"You're to write the history, of course!" the captain said with surprise. "What do you think I've been explaining to you?"

"I guess I got lost back there. . . ."

"Do you want me to go over it once more?" the captain asked patiently.

"No, sir. That's all right."

The woman stopped her rapid typing, and the office was suddenly very still.

"I'm going out for coffee, sir," the girl said. "Do you want a cup?"

"By all means. Maybe the sergeant wants a cup, too."

"Yes, sir. I like mine with a half-spoon of sugar and just a little cream."

"Got that, Marie?" The captain smiled at the typist. As soon as the girl closed the door, the captain turned a stern expression upon Sergeant Russell. "I didn't want to say anything with Marie in the room, but you're going to have to pay better attention when I tell you things."

"I'm sorry, sir."

When the typist returned with the

(Continued on following page)

LET'S HAVE YOUR JET BLAST

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MEN WHO LOOK TO THE FUTURE LOOK TO THE AIR FORCE RESERVE

three steaming cups of coffee, there was silence until they finished. When the girl began to type again, the captain went on with his explanation of the sergeant's duties.

"I was talking about general reference works, wasn't I?"

"No, sir, I don't think so."

"Then it's time I should," the captain chuckled. "These are indispensable aids for the historian, especially the new historian. In addition to the conventional types, I suggest a Sanskrit dictionary to check on marginal scribbling. A line or mark in the margin may seem meaningless, but the last historian discovered several notes that were actually Sanskrit. Had he not been keenly perceptive, these scribblings might easily have gone undetected. You'll also need an almanac and the book on the decimal file system, plus the alphabetical index to authorized abbreviations. Remember, the final story can be told only when everything is learned.

"Now, a knowledge of shorthand is useful, because you'll have to take notes when you sit in on conferences, but never take notes when you interview personnel. It makes them nervous, and they might distort the truth to their own advantages. Always pretend like you know very little about the subject; but then you have to keep in mind that if you act like you don't know what you're talking about, the interviewee may fabricate a story."

"Yes, sir."

"And for interviews, questionnaires are very good. However, although the questionnaire gives the interviewee time to reflect on his answers, he will write extremely short answers. People are lazy, you know, and they have a tendency to take the easy way."

"Yes, sir."

"Well, Sergeant," the captain said, "we've been gassing here long enough, and I suppose you're anxious to get to work."

"Yes, sir. I suppose so," the sergeant said unhappily.

"Then hop to it." The captain began to study a sheaf of papers from his "In" basket. Sergeant Russell swept a stack of newspapers off his chair and sat down. He stared disconsolately at the walls, his eyes glassy.

"Sergeant," the captain cleared his throat, "you'd better get busy. You've got a lot to do, you know."

"Yes, sir," Sergeant Russell replied nervously. "It's just that I don't know how to get started. . . ."

"You start at the beginning, Sergeant," the captain said briskly. "Always start at the beginning."

"Yes, sir." Turning back to his desk, Sergeant Russell removed a freshly sharpened pencil from the center drawer, and slowly began to write on a new, foolscap tablet.

My name is C. Wyatt Russell. I am a Technical Sergeant in the United States Air Force. I was born on January the second. . . .

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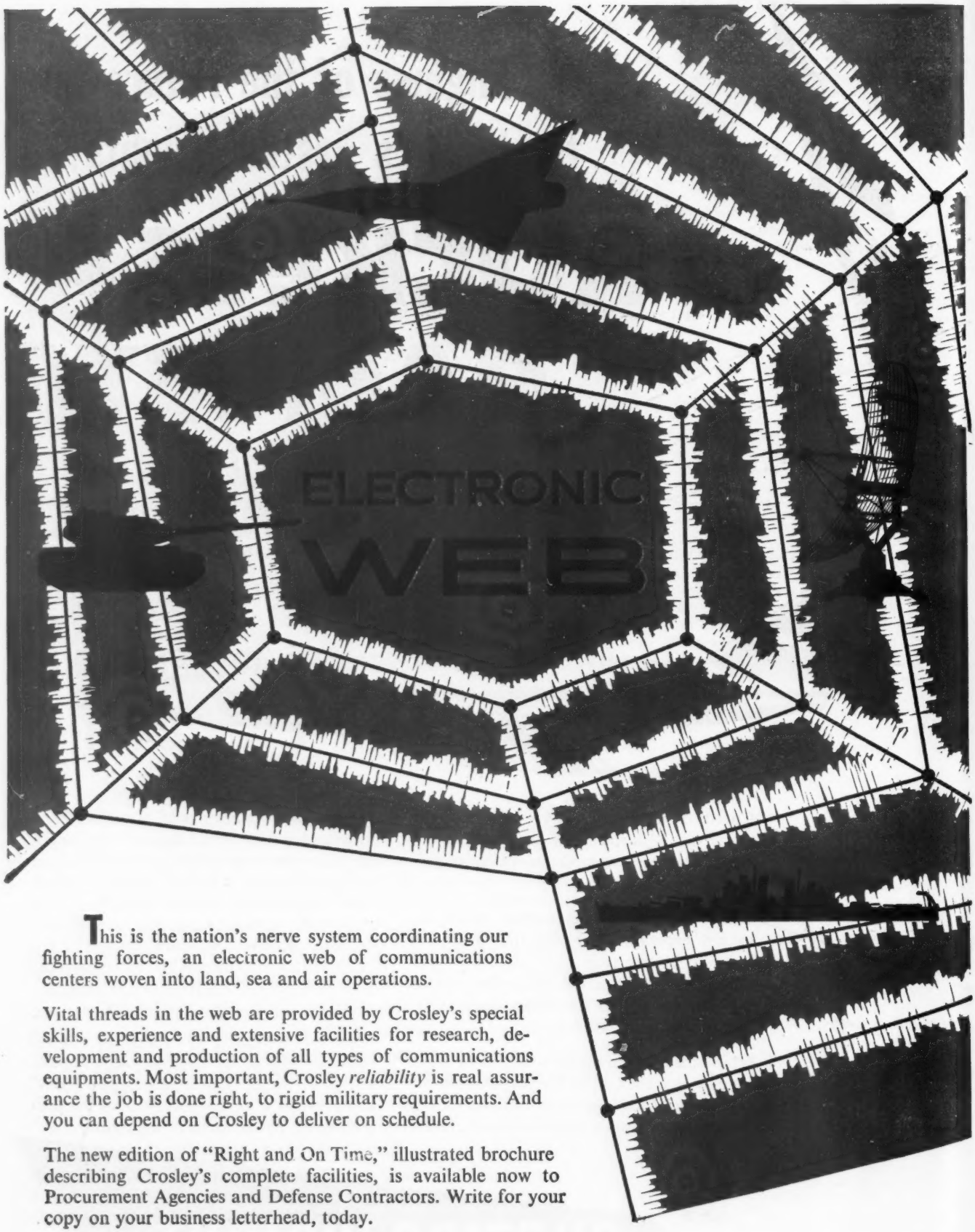

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The READY ROOM

RESERVE AND AIR GUARD NEWS

The Air Force Association, in keeping with the increased emphasis being placed on the role of **reservists in air defense,** this month scheduled the **first major classified briefing** on the subject for those Air Force Reserve and Air National Guard units whose primary M-Day mission is defense of the nation's skies.

The day-long briefing by Air Defense Command officials will be held **February 12** at **Ent AFB, in Colorado Springs.** Invited were some ninety-seven squadron commanders, thirty-two wing commanders, AFTRAC commanders, state adjutants general, along with representatives of Continental Air Command and the Pentagon's office of the Assistant Chief of Staff for Reserve Forces, and Air Force Division of the National Guard Bureau.

The **agenda** worked out in a series of conferences between ADC Headquarters and AFA's staff called for presentations on: "The Threat," by **Brig. Gen. Woodbury Burgess,** Deputy Chief of Staff, Intelligence; "Mission and Organization of Continental Air Defense Command," by **Col. Edward A. Herbes,** Director, Plans and Requirements; "Air Defense in Action," by **Col. John C. Meyer,** Director, Operations and Training; "Augmentation Forces," by **Col. Ben I. Mayo, Jr.,** Chief, Operational Plans; and "Air Base Problems," by **Col. Harry W. Shoup,** Chief, Combat Operations Center. The agenda also called for a tour of the COC, **nerve center of the country's air defense,** and a summary by **Maj. Gen. Frederick H. Smith, Jr.,** Vice Commander-in-Chief, Continental Air Defense Command.

Michigan State's Arnold Air Society selected this bevy of beauties to be queens of the annual Military Coronation Ball. With orchestra leader Vaughn Monroe are, left to right, Diane Raeme, Joan Weaver, Jeannie Warrington (honorary colonel), June Walters, Bobbie Williams, Faye Fitzgerald, Marie Mayers, Joyce Cosmann, and Marilyn Thayer. The college has 1,500 AF-ROTC cadets enrolled.

Conference plans were completed shortly after USAF announced **changes in mission and designation** for many Air Force Reserve wings. Under the new concept the Reserve's fighter-bomber wings will be assigned on M-Day to Continental Air Defense Command and then released to Tactical Air Command. This mission is similar to that already assigned the Air Guard's fighter-interceptor and fighter-bomber wings.

At present **the Reserve** has nine troop carrier, six fighter-bomber, two tactical reconnaissance, and six flying training wings. Under the new organization it will shift to thirteen airlift wings, nine fighter-bomber, and two tactical bomber wings.

The nine **fighter-bomber wings** will be made up of the six now designated as such, plus two currently designated as flying training wings and one now designated as a tactical recon wing. The flying training wings scheduled for conversion are those at Hensley Field in Dallas and at Memphis, Tenn. The tactical recon wing to be converted is located at Dobbins AFB, Marietta, Ga.

The thirteen **airlift wings** will be made up of the nine existing troop carrier wings, a new wing at Andrews AFB in Washington, D. C., and the conversion of flying training wings at Ellington AFB, Tex.; Brooks AFB, Tex.; and Floyd Bennett Naval Air Station, Brooklyn, N. Y.

The two **tactical bomber wings** will stem from the redesignation of the flying training wing at Scott AFB, Belleville, Ill., and redesignation of the tactical recon wing at Long Beach, Calif.

The **Air National Guard** will retain its twenty-seven wings but all seventeen of the fighter-bomber wings will be redesignated fighter-interceptor, bringing the number in this category to twenty-three. The Guard's two tactical reconnaissance wings will not be changed, but its two light bomb wings will be redesignated as tactical bomb wings.

* * *

These changes will be accomplished by personnel increases designed to build the ultimate strength of the reserve components to **349,000 officers and airmen** and by the establishment of some **forty-five additional Reserve bases.** They are tied to the "New Look" Reserve program which President Eisenhower submitted to the Congress last month.

The plan submitted by the President followed almost to the letter the blueprint outlined by the Department of Defense a month earlier and pinpointed in AIR FORCE (January '55).

The President's special message carefully avoided calling the program **universal military training.** But in modified form this essentially is what it is. It calls for a four-year extension of the Selective Service Act and then sets up **a number of options** under which young men may fulfill service obligation. **One option** would permit a specified number of youths between the ages of seventeen and nineteen to volunteer for six months of basic training to be followed by nine and one-half years of active reserve service. Defense has estimated that this number would be about 100,000 a year. **Another option** would permit two-year enlistments in the Army. **Still another** would permit four-year enlistments in the Air Force. Both latter opinions, like the first, would require further service in a reserve component following discharge from active duty.

The President emphasized the volunteer aspects of the "New Look" Reserve program, but he also suggested penalties to assure participation. One would permit recall to active duty of those who were **delinquent in unit training assemblies.** Another would authorize "other than honorable" discharges at the end of the period of military obligation for those who **failed or refused** to take part in the required reserve training.

This program, the Administration believes, will give the nation a truly ready reserve, available immediately if needed. But, if

(Continued on following page)

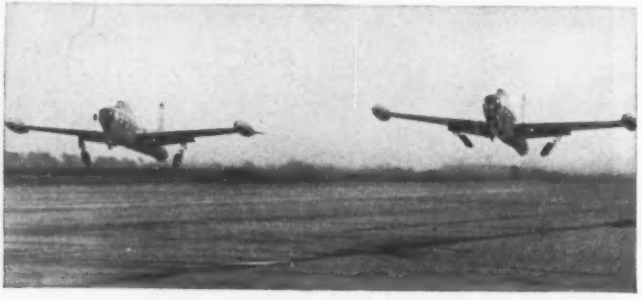
Major commanders of the Minneapolis Air Reserve Center use whirlybirds to visit outlying squadrons and flights. Col. Hugo C. Erickson waves farewell from a helicopter to Maj. Patrick O'Connell, center training director, as he takes off on the first such flight.

Savannah's 158th Air Guard Squadron is one of seventeen throughout the country on active air defense runway alert. Maj. Donald S. Smith and Capt. Sheftall B. Coleman, Jr., are two of the pilots currently on duty in this phase of the Guard's contribution to picketing the skies. Volunteers in the best tradition of the word, they are poised to intercept on five-minute notice.

At home, Coleman relaxes with wife and children.

Sweating scramble, Coleman and Smith play cards.

Warning on, they race to their "hot" F-84s.



Gear coming up, they're airborne for the intercept.

past experience can forecast the future accurately, Congress will not subscribe to any program that even smacks of UMT.

* * *

Wheels have been set in motion for the Air Force Association's **second annual Earl T. Ricks Memorial Trophy Race** for Air National Guard jet pilots.

Subject to required Pentagon approval, the race is scheduled to be held again this year **in late July** as the feature of the International Aviation Exposition in Detroit. Fourteen pilots competed in the inaugural event, which started at Ontario, Calif., International Airport, and was won by Lt. Charles J. Young of New Jersey's 141st Fighter Squadron in the elapsed time of three hours, twenty-seven minutes.

Both AFA and the National Guard Bureau are eyeing **Los Angeles International Airport** as the possible site for the start of this year's event, but no decision will be made until the number of competitors is known. If each fighter wing is permitted one representative, **twenty-three will qualify** to start. In this event, some **handicap system** must be devised to give the drivers of slower jets equal opportunity with pilots of the F-86s and F-84s. For planning purposes, the Bureau has asked the University of Maryland to establish proper handicaps for all types of aircraft over the more-than-2,000-mile distance.

This race was devised by the Air Force Association to honor one of its charter members, the late **Maj. Gen. Earl T. Ricks**, former deputy chief of the National Guard Bureau and lifetime advocate of airpower.

* * *

Air Guard pilots who had hoped to attend either the **qualification** or **familiarization course** between now and the end of June can plan on disappointment. There are **no spaces available** to the Guard for the qualification course. And **only seven spaces** have been given the Guard for the familiarization course. The Bureau has returned all applications for the qualification course and all but seven for the familiarization course. The Air Force has been asked to give the Guard the spaces it needs but the Regular establishment is concentrating on getting its own pilots checked out. Prospects for lifting Guard ceilings are remote.

* * *

NGB has issued another strong reminder relative to **physical exams** for persons in the Air Guard. Current law requires a complete physical **once each four years** for non-rated individuals plus a statement in each intervening year that there has been no significant change in his health. All those on flying status, together with those who have reached forty years of age, must take a physically annually. Two regulations cover procedures: **AFR 60-1** for those on flying status, and **ANGR 160-19** for periodic medical checkups.

* * *

Notes on the back of a Form 175 . . . NGB says it has received complaints of **violations of uniform regulations** by ANG officers visiting Washington on official business. Advice is: Wear the right uniform at the right time . . . Commanders who have prepared certificates of **non-availability** of government quarters and messing facilities at field training sites for their air advisers won't be permitted to do so any more. The Bureau says it has "no knowledge of circumstances which, under present regulations, would make it possible for commanders at field training sites to certify that quarters and messing facilities are not available" . . . There are a number of openings available to the ANG in the **Air-Ground Operations School** at Southern Pines, N. C. For the most part, spaces are available in the Indoctrination Course, Specialist Course, and Forward Air Controller Course. Applications should be made on NGB Form 64 . . . **Basic military training courses for ANG recruits** will be held in June, July, and August at three Air Force Base sites: Sampson in New York, Lackland in Texas, and Parks in California. The classes last about twelve weeks and only those who can complete the entire course are eligible to attend. Each state will be told next month of the actual quotas available . . . The winning team in the **annual ANG gunnery exercises** at Boise, Idaho, now may display the insignia of victory on its aircraft for one year. It's all spelled out in ANGR 35-63. Air Materiel Command will provide the necessary decals . . . A new **warrant officer promotion reg,** ANGR 36-013, spells out qualifictaions for upgrading in this field. Minimum years of promotion service are established.—END

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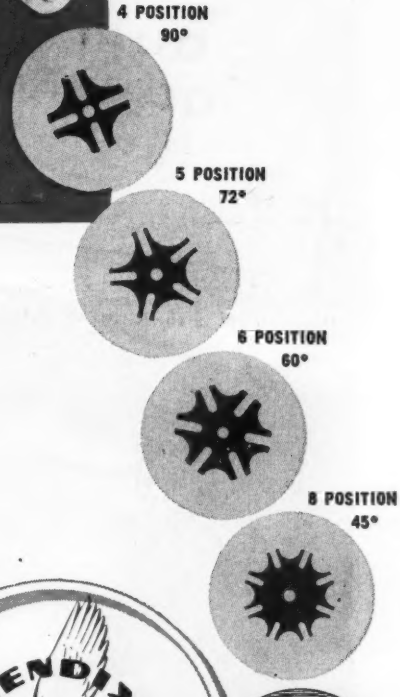

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Tech Talk

By Lee Klein

Navy's new Martin XP6M-1 SeaMaster. Four Allison J-71 jets with afterburners give it a speed of more than 600 mph and cruising altitude above 40,000 feet.

The **XP6M-1 SeaMaster,** hailed as the world's **first multi-jet attack seaplane,** was unveiled last month. Navy officials said that **Martin Aircraft Company's** new plane introduces a new era in flying boat operations. Most performance details were withheld, but the SeaMaster was described as capable of speeds **above 600 mph** and cruising altitudes **above 40,000 feet.** Four **Allison J-71** turbojet engines, able to deliver 10,000 pounds of thrust each, are set in nacelles atop the wings to keep them as far away from spray as possible. The five-crew plane was designed for either **mine-laying, photo-reconnaissance, or bombing,** and has a rotary mine door which could drop a variety of weapons. The SeaMaster, scheduled for test flights in the spring, was described by Martin officials as "a truly water-based aircraft, designed to remain in operation—on flying missions or afloat—for long periods of time, and able to operate in high waves and marginal sea conditions." Submarine tankers could refuel the new plane at sea, according to the Navy.

Most pilots are confident of their ability to bring a plane in to a safe crash landing or to escape unharmed from a disabled plane in the air. But the thought of a fire under either circumstance shakes up the bravest. A new development that may reduce this hazard has been demonstrated at the CAA test center at the Weir Cook Airport in Indianapolis, Ind., in cooperation with **Goodyear and the United States Rubber Company.** In the test, a water-filled fuel tank mounted inside a wing section was catapulted at 70 mph into a steel-backed sandbag barrier. Although the one-ton wing section was battered and did a back flip off the barrier, the tank inside did not spring a leak. The new tank, made of four layers of **rubber impregnated nylon,** was evolved after a five-year development program during which fifty different materials were tested. Results of the tests indicated that fires caused by crash impacts could be reduced and maybe eliminated completely. The tanks were designed to prevent a fuel-fed cabin fire in accidents where the passenger can survive the crash impact itself. A big drawback in the tanks, however, is their heavier weight. Officials estimated that the added weight of installing the nylon tanks would amount to 200 to 600 pounds, depending on the type of airplane.

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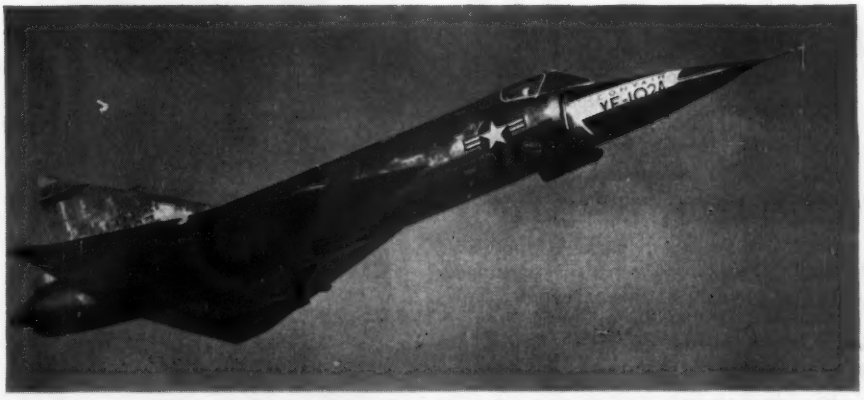
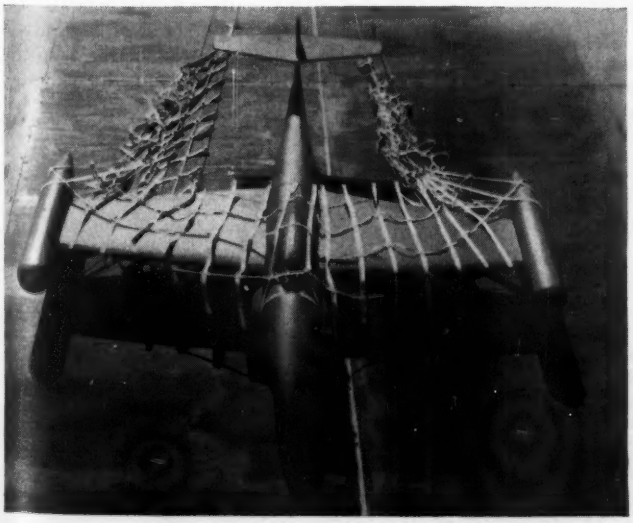
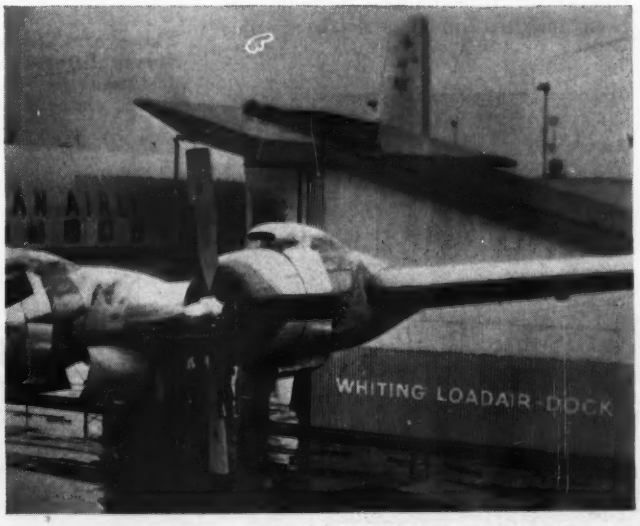


The Convair F-102A delta-wing all-weather interceptor reached a speed faster than sound in level flight during its second test hop at Edwards AFB, Calif.



A jet model, speeding at 110 knots, is halted in test of barrier at All American Engineering Co., Wilmington, Del.



A new mechanism called the Whiting "Loadair" moves plane sideways on tracks to the terminal entrance.

Curtiss-Wright Corporation is marketing a new line of ultrasonic equipment, including a drill that can cut holes **without rotating movement.** Called the **Diatron,** the drill can cut holes of any shape in a variety of materials by employing an **abrasive suspended in a liquid** and distributed over the cutting head in a thin film. The cutting head vibrates at 25,000 cycles per second, above the audible range of sound. Another unit cleans parts by exposing them to ultrasonic vibrations to shake loose grime and dirt.

A new device that should **increase the accuracy of visibility information** for incoming planes has been installed at Andrews AFB, Md. The Air Weather Service of the AF recently unveiled the **first operational transmissometer,** an electronic instrument that measures the **amount of foreign material** such as dust, water vapor, and precipitation in the air along a horizontal line and records it in terms of visibility. One big advantage of the unit is that it can be placed near the touchdown zone of an airport to give the pilot information from the spot where he needs it rather than from a weather station removed from the runways. About twenty more bases in the US are scheduled to receive the weather aid.

Two helicopter manufacturers—**Gyrodyne Company of America, Inc.,** St. James, L. I., N. Y., and **Hiller Helicopters,** Palo Alto, Calif.—have been awarded contracts as a result of a Navy design competition for a **one-man portable helicopter.** The designs selected by the Navy are for a rotorcycle which can be collapsed into a small package for easy transportation and quickly assembled. Each company has been awarded approximately **$200,000** for research and development of the machine which is intended for future observation, liaison, escape, evasion, and tactical use by the Marine Corps.

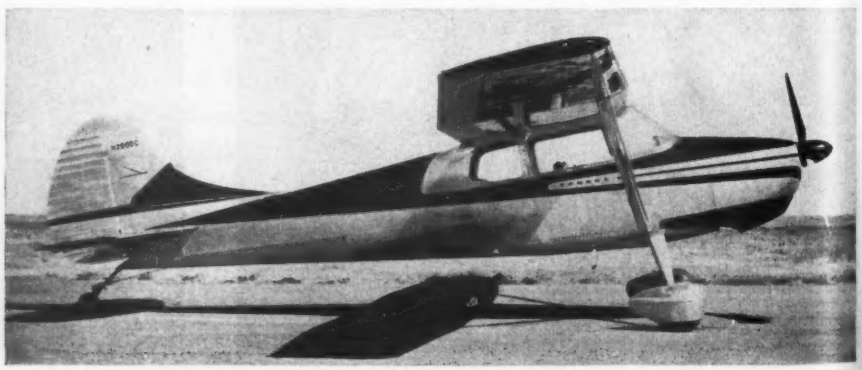
A radar unit, **the AN/CPS-9,** built specifically for meteorological purposes, has been installed on top of Great Blue Hill in Milton, Mass., near Boston. The unit, according to scientists at the **AF Cambridge Research Center,** will be able to determine the size, intensity, and sometimes the direction and speed of movement of squalls, fronts, thunderstorms, hurricanes, and rain areas moving toward Greater Boston from distances as great as 300 miles. The new unit is intended for research purposes rather than as a weather warning unit and information obtained from the set will be studied by the Atmospheric Physics Laboratory of the Cambridge Center.

These are the basic elements of the Sperry Integrated Instrument System designed to give pilots better and more pictorial cockpit information.

Pictured at left are **three new aircraft instruments** developed by **Sperry Gyroscope Company** to give pilots more pictorial cockpit information. The units are designated the Sperry Integrated Instrument System and are said to provide improved presentation and performance without requiring more units than the "basic six" in common use. (Besides the three units pictured, the six include: altimeter, airspeed, and rate of climb indicators.) The **Horizon Flight Director,** (HZ-1, bottom) gives the pilot an indication of how to move his controls to seek and follow a desired flight path and tells him his pitch and roll attitude at all times. The directional element of the system (C-6 **Gyrosyn Compass,** top) is said to give the pilot improved radio crossbearings directly on a master dial which is free from repeater errors. The third element (R-1 **Pictorial Deviation Indicator,** center) gives a pictorial representation of the plane's position and heading relative to radio beams. It portrays the beams by means of a narrow converging V-shaped bar that shows pictorially the location of the ground transmitter with respect to the airplane. The new indicator also incorporates an omni-bearing selector and shows both the ILS (Instrument Landing System) glide path and localizer deviation.

An **experimental thrust-reverser,** designed and built by **ARDC,** has been installed on a Republic F-84F (see cut) for testing. Employing a **series of "cascades,"** it diverts thrust gases forward in the direction of flight, reducing the aircraft's forward speed.—END

Close-up of thrust reverser installed on an F-84F. ARDC is testing device.



Cessna's 1955 Model 170. The all-metal plane is equipped with a six-cylinder Continental engine, a McCauley propeller and has new, larger rear windows.

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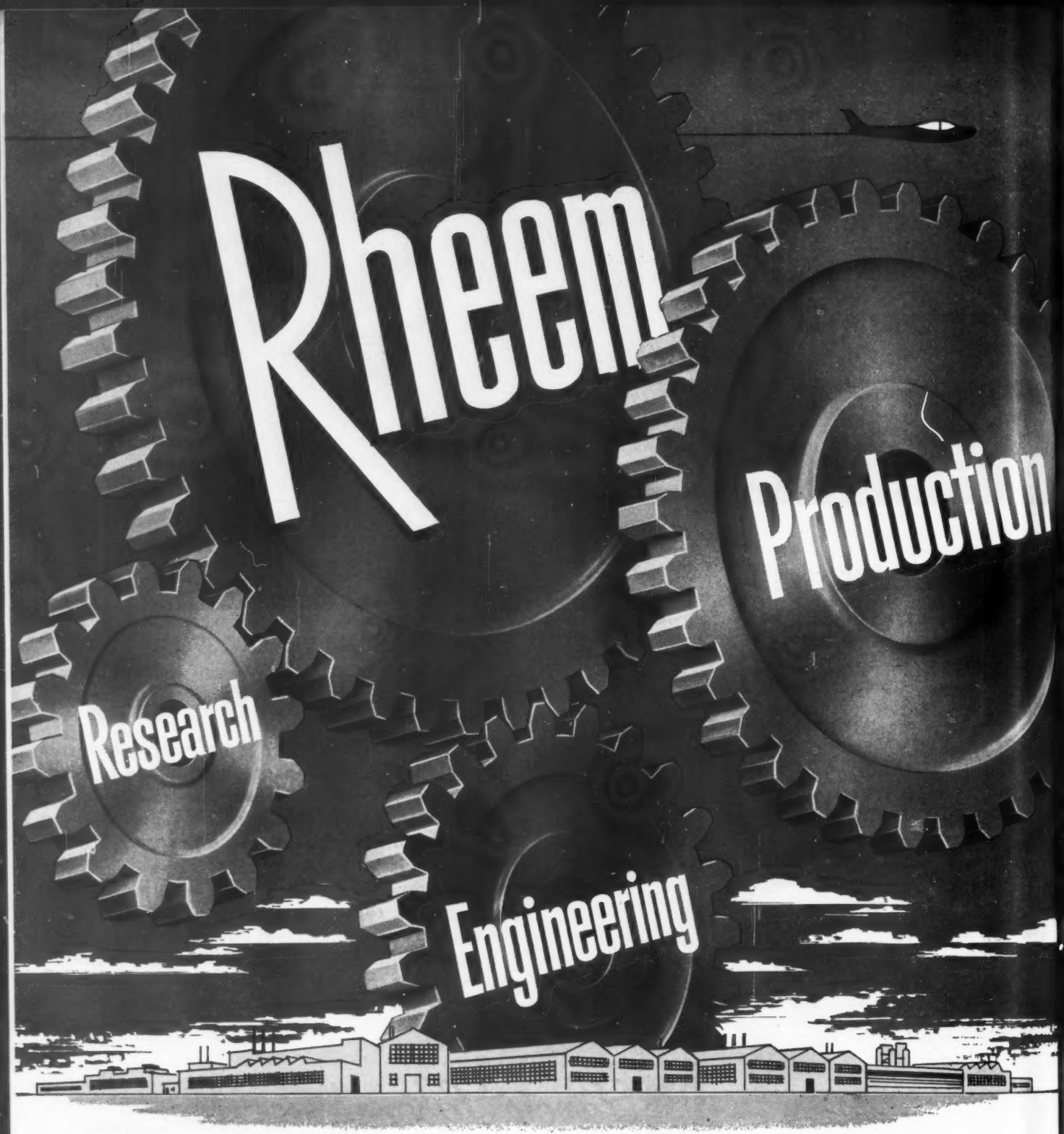

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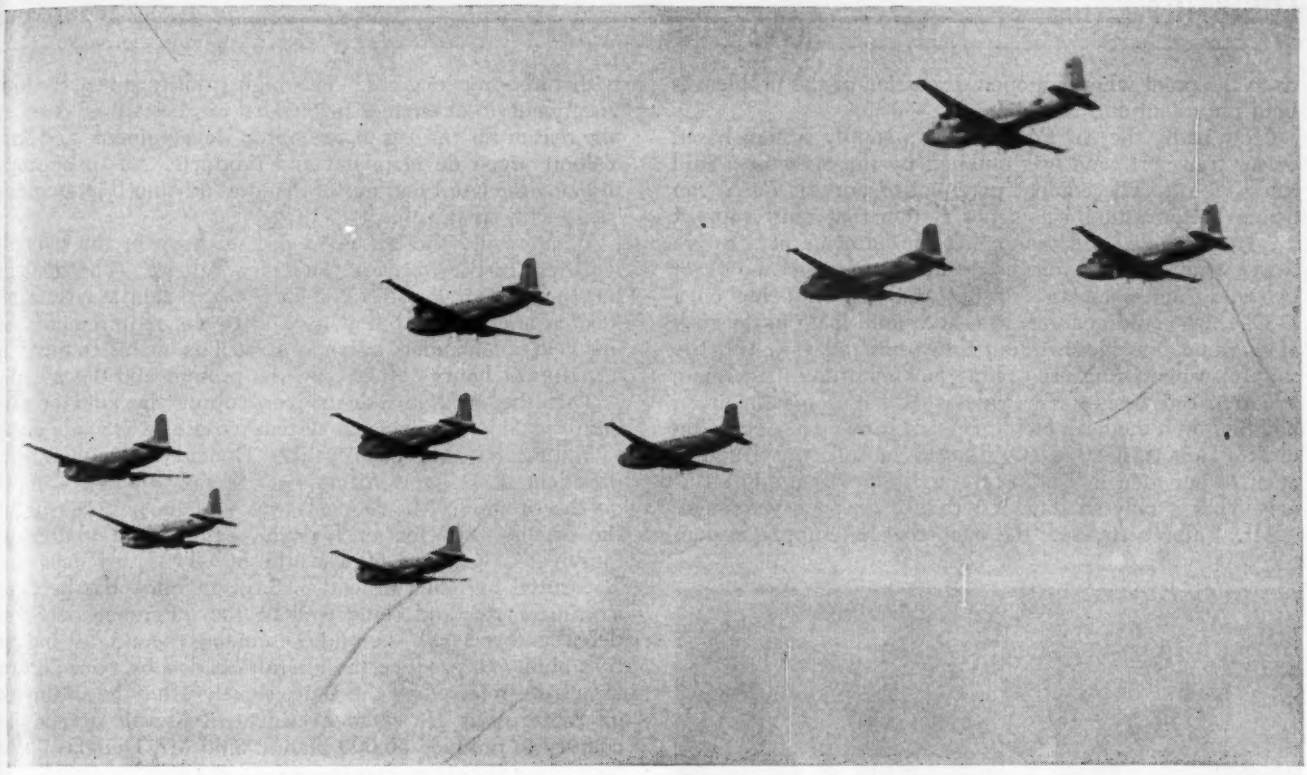

Air logistics, as pictured here by these Douglas C-124 Globemasters, is less vulnerable than surface transport in time of war.

Modern Air Logistics

A report on the Air Logistics Conference sponsored in December by the Air Force Association

JIMMY Doolittle said it all in these words, "A modern air logistics system with an adequate amount of new equipment specifically designed for the air logistics mission is a national military requirement. It will not only improve our political posture and increase our military capability but will save time, manpower, equipment, and dollars."

That, in two short sentences, was the substance of the Air Logistics Conference, sponsored by the Air Force Association as one of the many functions of its Industrial Associate program. Last December 16 a glittering array of government and aviation industry figures gathered in Washington's Mayflower Hotel to participate in what all agreed was the finest program of its kind ever held. More than 800, a capacity crowd, jammed into the Mayflower ballroom to hear the pressing need for a modern air logistics program outlined in public for the first time. Included in the registrants were more than 500 industrial executives, among them sixty-seven presidents, fifty-seven general managers, and seven board chairmen.

AFA President John R. Alison, long an articulate spokesman for a streamlined air supply system, kicked things off by explaining that the conference "fulfills two of the primary objectives of the Air Force Association; first, to educate its members and the public at large in the proper development of airpower; second, to assist in every way possible in keeping the United States Air Force adequately strong and powerful for the defense of our country."

Moderator Doolittle then took over. In introducing the first speaker, Secretary of the Air Force Harold E. Talbott, AFA's founder put the meeting into proper perspective in these words, "In all our discussions today let it be clearly understood that the obtaining and retaining of 'control of the air' is the primary Air Force function. Our striking power and our defensive airpower must continue to have first priority.

"Air logistics supports these major Air Force missions and will assist the Navy, and is essential to the Army in the accomplishments of their missions. It has been the subject of considerable debate during and since World War II. Aeronautical developments of the past decade have brought

(Continued on following page)

us to the point where an open discussion of the problem is both important and timely."

How badly the Air Force needs a supply system based on air transport then was outlined by the Secretary. Said Mr. Talbott, "The combat potential of our Air Force can be no better than the logistics system that must support it." He reminded the group that the outcome of a future world-wide conflict could be decided in the first month or two and "unless an air logistics system is in-being on a D-Day, we could not shift to it and build it up in the rush of wartime priorities without disastrous delays." And the supply system being used today looks pitifully inadequate when placed beside the strides that have been made in building up a modern, mobile, global Air Force. According to Mr. Talbott, it takes 100 days to get an item of equipment to our men in Europe through normal supply channels. That is only six days less than it took ten years ago.

Mr. Talbott stressed the fact that a "supply system geared to modern warfare" would actually result in great savings in many cases. He said that in 1953, for instance, the AF moved about 185,000 men to and from overseas bases by surface transportation. He told the conference that a study of this problem "shows that we could have saved more than 8,000 men by the use of air." He estimated that engine requirements for the AF could be reduced by about twenty-five percent if air transportation were used to bring them back to the States for overhaul. It now takes a staggering 270 days from the time an engine leaves an overseas base, travels by ship to the US, is overhauled, and then sent back again by water transportation and returned to the unit to be installed. He said that this cycle can be reduced to 100 days by air transportation and would amount to a saving of a "good many millions of dollars." (This is being initiated with the Air Force's "engine airlift project"—using both commercial and AF transports.)

Wide World Photos, Inc.

Three of the key figures at AFA's Air Logistics Conference discuss the program. Shown, left to right, are James A. Doolittle, Air Force Secretary Harold Talbott, and Donald W. Douglas, president of Douglas Aircraft Co.

Slowness in the development of adequate turboprop engines was listed by Mr. Talbott as one of the main reasons we do not yet have the logistics system we need. He said that the AF needs a "heavy transport which will carry at least 100,000 pounds with a range that will permit it to haul material from bases in the US direct to our overseas bases."

Speed would be secondary to range for this transport, but the Secretary felt that a plane filling the requirements of range, speed, and lift could "probably best be developed with turboprop engines." The high priority given the development of jet engines for combat airplanes was listed as one reason for the lag in turboprop development, and Mr. Talbott urged development and production of turboprops utilizing the latest features of the most advanced jet engines "as quickly as possible."

What would the Air Force like to have in the way of logistics? In the words of Secretary Talbott: "The goal of our modern air logistics system is to provide a system so flexible and fast that it will react to the requirements of our field commanders overseas as well as in this country in a matter of hours—rather than the present 100 days."

That the aviation industry can supply the kind of aircraft the Air Force logistics system requires was made clear by the second conference speaker, Donald W. Douglas, Sr., president of Douglas Aircraft Co. Following Mr. Talbott on the program, Mr. Douglas was equally positive about the urgent need for air logistics, calling it a matter of "survival." Speaking of a world in which distances are "measured by hours instead of days, mobility has become a prime factor and could well be the difference between defeat and survival," he said. Discussing the aircraft industry's ability to produce the aircraft needed by the military forces, he referred to the time, shortly after the outbreak of World War II, when President Roosevelt asked the country to produce 50,000 planes. Said Mr. Douglas, "We have done it before, and we can do it again."

Mr. Douglas talked about a logistics carrier "of the type which the state of the art and availability of the powerplants now make it possible to design." Though he gave the plane no designation, everyone knew he was talking about the Douglas XC-132 when he assigned to the airplane "a gross weight of around 400,000 pounds, a 100,000-pound pay load, a cruising speed in the vicinity of 500 mph and a range of 1,500 to 3,500 miles." According to Mr. Douglas, a fleet of only nine of these logistics carriers could do the work of 171 C-54s or fifty-eight C-124s "at a cost of from one-fourth to one-third of that needed to operate the older models and in less than half the time." He said that this unnamed airplane would operate at a cost of about 3½ cents a nautical ton-mile.

Mr. Douglas cautioned against playing the turboprop and turbojet engines against each other. "They complement one another and are both essential to a well-rounded air logistics system," he said. Logistics carriers must be designed for varying missions, according to Mr. Douglas. And they "must include turboprop and turbojet as well as long-range, short-range, and 'distribution' types to give the armed services the mobility modern warfare and national defense demand." He called for a "fleet-in-being in daily universal operations" in order that the armed services might be ready and able to meet airlift requirements during an emergency.

Mr. Douglas also pointed out the money that could be saved with a new concept of air logistics and said that "flexibility and security result in tremendous savings in operating costs and manpower." Taking a look into the future, he said that the eventual application of atomic energy to aircraft propulsion will reduce the fuel requirements, and "nuclear freighters of the sky will be able to reach out to the limits of the world without refueling." Industry, he said, "has the capability, the determination and the technical resources to add the new concept of air logistics to our airpower for the defense of our freedoms and for peace."

The Air Force needs a modern air logistics system; industry says it can supply the equipment for it. Is it economically feasible? That was the next question.

(Continued on page 71)

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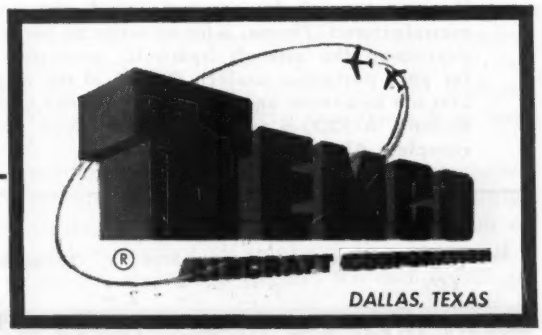

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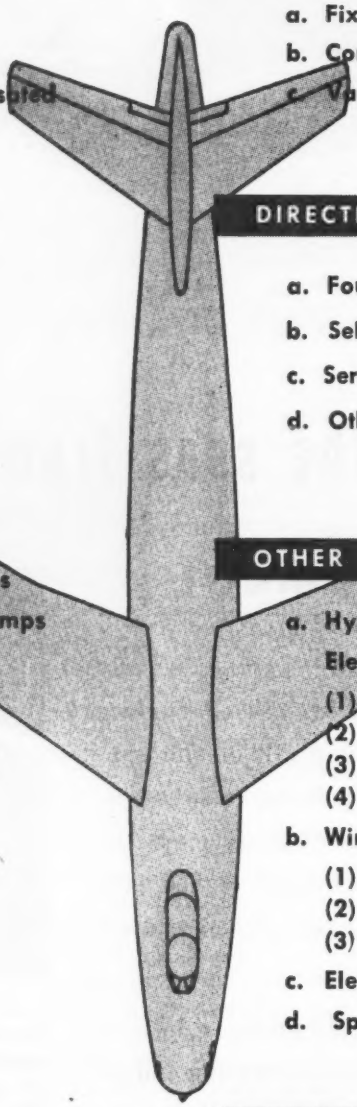

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ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

According to Dr. George T. Baker, professor of Transportation at the Harvard Business School, the answer is yes, *if changes can be made all along the logistics chain.* He stressed the fact that building a logistics system that makes economic sense "is not just a matter of plugging in an airplane in lieu of some surface vehicle." Reporting on a study the Harvard school made for the Air Force, Dr. Baker said, "As we got into the project we found that essentially a study such as this involved the entire logistic span —from initial procurement to final scrapping. It involved a look at procurement, manufacturing, inventory policy, and consumption, as well as the more obvious areas of transportation, packaging, and the like." He felt that omission or neglect of any of several logistic aspects could "turn air logistics into an economic fiasco of major proportions in terms of cost to the taxpayer." However, he said that the economic aspects sometimes must be ignored when the military need was the overriding factor and stressed that "the AF cannot be run in all respects like a business, with the main emphasis on economy in dollars and cents."

Under the present system, Dr. Baker said, "many of the logistic decisions made on the basis of long-term forecasts and predictions are found to be sour. The wrong article has been procured or stocked; the needed one is in short supply. The right article is in the wrong place; stocks of unwanted or seldom wanted parts are enormous." This leads to the paradox of scarcity amidst plenty and causes enormous waste, he said.

Dr. Baker suggested three kinds of changes to improve the present logistics system. They include:

- "A radical speed-up in cycling of the entire system;
- "A compression of the time between decision to buy, make, or stock, on the one hand, and consumption, on the other; and
- "Greatly improved information on consumption and use of this information and companion information on production and stockage status and problems to bring about more effective control over the various phases of the logistic cycle."

"Even with greatly improved and more efficient transports," Dr. Baker said, "transportation and handling costs will be substantially in excess of surface costs." But he pointed out that "the main economic advantages of an air logistics system lie outside the area of direct transportation and handling." He listed these savings as those resulting from reducing packaging costs and those arising out of better inventory control and related to obsolescence.

Dr. Baker raised the question as to who would operate the large logistic aircraft. He said he felt strongly that, "except where military reasons absolutely dictate otherwise, the logistic air transport fleet should be operated by civil air carriers." He also wondered about the Air Force's ability to put into effect a modern air logistics system as outlined in the Harvard report. "To get an economic payoff, the crucial changes must come at other [than in the hardware items] points in the logistics chain—in control and management of provisioning, manufacturing, and inventory. In the face of formidable complexities and in view of the sheer size of the AF, he asked, "Can these changes be made?"

The commercial implications of the logistics problem were discussed at the afternoon session by C. R. Smith, president of American Airlines, and past president and now a director of AFA. As did the speaker who preceded him, he stressed the importance of being prepared to supply the AF in the early days of a war, because "the success in the early days of the war very appreciably determines the ability to win the war in the later days." Otherwise, he went on, "we are going to enter the war with an inefficient Air Force because the combat effectiveness of groups will depend upon the ability to have them supplied without delay."

Harold E. Talbott, Secretary of the Air Force | Donald W. Douglas, Sr., President, Douglas Aircraft Co. | Dr. George T. Baker, Prof. of Transportation, Harvard Business School | C. R. Smith, President, American Airlines | Gen. Nathan F. Twining, Chief of Staff, United States Air Force | J. Paul Barringer, Dir. of Transportation Policy, Department of State

Of primary importance, according to Mr. Smith, "is to have a sufficient number of transports on hand on D-Day to supply the Air Force of D-Day without the need of intermediate landing." He said that later on we could put shorter-range airplanes in and do a good job. But he maintained that "we can't put our jets down on an air base which cannot be supplied unless you have intermediate bases." He felt that a limited number of "darned good" transports in the opening days of a war were more important than a great number of small and inefficient transport aircraft.

Recalling his experience as deputy commander of the Air Transport Command during World War II, Mr. Smith said that one of the big problems was the lack of uniformity in airplanes that the AF took over from the different airlines. Each company had its own specifications and the military pilot had a lot to learn all over again every time he took a plane from a different airline. The airline executive urged that "both the airlines and the military service do a better job of making their airplanes more uniform, solely from the standpoint of military usefulness if we have another war."

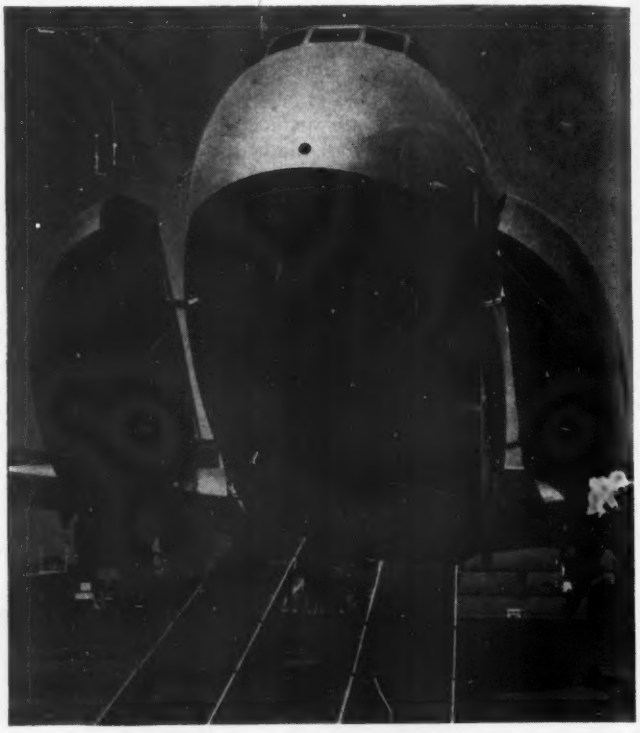
On the problem of power plants, Mr. Smith criticized the "dilly-dallying among reciprocating engines and turboprops and turbojets." He called for a firm decision on which type of power plant air transportation needs. "If it happens to be the turboprop engine, we had better get behind the turboprop engine and get some built because

(Continued on following page)

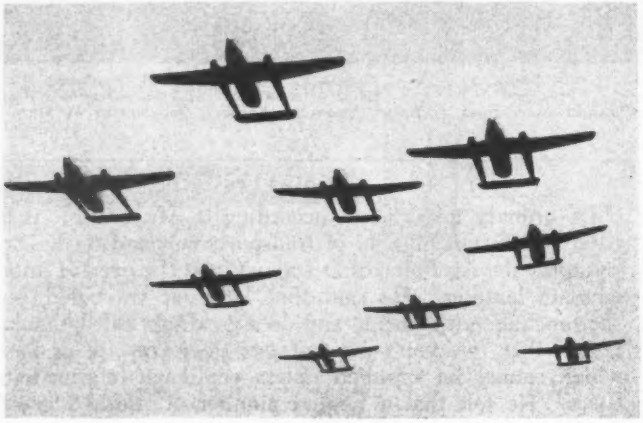
there isn't a single modern turboprop in the US," he said. In answer to a question following his speech, Mr. Smith agreed that the air logistics requirement calls for both the turboprop and turbojet, depending on the range and speed required for different tasks.

Following Mr. Smith on the program, Gen. Nathan F. Twining, Chief of Staff of the Air Force, told the conference about the military aspects of air logistics and their importance to combat operations. General Twining said that "our logistic support must be tailored to our air strategy and our national strategy." It must also, he added, "be designed against the dangerous prospect of surprise attack with modern weapons." He said that while an air logistics system cannot attain complete invulnerability, "our studies indicate that modern weapons constitute a greater threat to surface transportation systems than to air systems." Since a part of our forces must be stationed overseas, he called for a logistic system that could "put down supplies at any of our world-wide bases wherever and whenever needed." He emphasized that "our combat force can only be as effective as the logistic system that supports it."

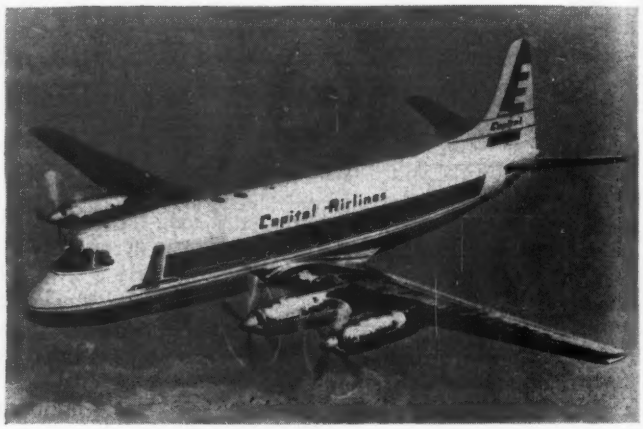
General Twining said that the 50 million ton-miles of airlift provided by MATS each month does not fully meet the peacetime requirements of the services. "This airlift capability must be increased both for peacetime need and to meet the greatly increased requirements that would arise in war." He pointed out that the airlift capability is being increased by the AF, and that the number of transport squadrons has been doubled since the low point after World War II. The immediate objective, according to the general, "is to increase AF airlift capability by fifty percent in the next three to five years. In the succeeding five years, our goal is double or triple our present capability."



Proper use of airlift can save people, money, time, and materiel. Above, a giant Douglas C-124 Globemaster loads.



A flight of AF Fairchild C-119 Packets. AF is running a good transport operation, but needs bigger, faster planes.



Capital Airlines will soon be flying their British-built Vickers Viscounts, powered by four Dart turboprop engines.

The Chief of Staff said that the Civil Reserve Air Fleet (CRAF) which is made up of more than 300 four-engine transports, is earmarked to go to the military in case of war. In order that they can be quickly adapted to military use, the planes in this civil fleet have been modified to some extent, such as reinforcing the floors and in other respects.

Agreeing with most of the speakers before him, General Twining said that the real difficulty in air logistics is the fact that there is not an efficient turboprop engine in operation. "Now that the build-up and modernization of our combat force is progressing," he said, "we should be able to put more emphasis on the transport problem. We must concentrate more on designs of aircraft specifically for the airlift tasks we must perform." He mentioned that two very promising AF developments are underway "in long-range, 3,500-mile, heavy turboprop transports" and that one will be flying soon, but refused to give any more details.

In building a modern world-wide system of air logistics, many problems of foreign relations necessarily arise. Speaking on the *International Considerations* of air logistics was J. Paul Barringer, Director of Transport and Communications Policy, Department of State. He called the requirement for "a high degree of adaptability and flexibility throughout the far reaches of the world," basic to the logistics concept. He pointed out that the successful military application of a broad logistics concept depends on "the ability to operate on the sovereign soil and into and through the sovereign air space of a great number of foreign

(Continued on page 75)

An important announcement from General Motors to America's Aviation Industry and all who travel by air

IT has always been the aim of General Motors to supply America with the most efficient and dependable motive power for all types of transportation.

In motor vehicles, in locomotives and in many types of work and pleasure boats, GM gasoline and Diesel engines have long enjoyed the confidence of millions of people who depend upon them in their daily travels.

★ ★ ★

NOW General Motors is introducing to commercial aviation a new American-designed power plant and propeller which promise the same long step forward in passenger travel by air that GM has provided in other forms of mass transportation.

This new power plant is the Model 501 Turbo-Prop engine with matched Aeroproducts propeller, both produced by our Allison Division.

Behind each of them stand thousands of hours of military experience which has advanced engine and propeller development to a point of readiness for the passenger-flying public. This is a classic example of the benefits to the nation and the public which result from close cooperation between the Armed Forces and American industry.

Turbo-Prop power means a gas turbine engine similar to a jet, but with its tremendous power harnessed to turn a propeller.

The big advantage of the Turbo-Prop engine is that it uses less fuel than a jet, yet it enables aircraft to travel faster with *greater payload* than any other propeller-type engine.

The Allison Model 501 is the most efficient Turbo-Prop engine for its size and weight ever built in this country or abroad. It delivers more power than piston engines of twice its weight.

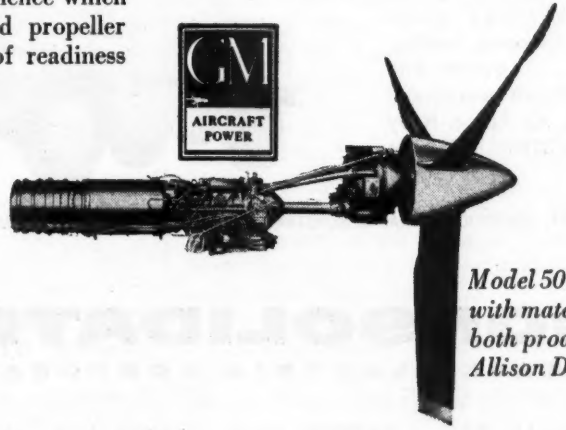
It incorporates all the knowledge that Allison has gained in building gas turbine engines that have *flown* more than five million hours — more flight experience than has been accumulated by any other turbine engine manufacturer — *experience in the air where it counts most.*

The military versions of the Allison Turbo-Prop already power eight different types of Navy and Air Force aircraft, including the new Vertical Take-Off Interceptors.

Now being readied for commercial use, the Allison Turbo-Prop will enable America's airlines to carry heavier payloads, maintain faster schedules, use shorter runways, and to offer passengers a far smoother, quieter, more comfortable ride.

While this Allison Model 501 engine can be installed in today's airplanes, the aircraft industry is busy designing new airframes to take fullest advantage of its performance.

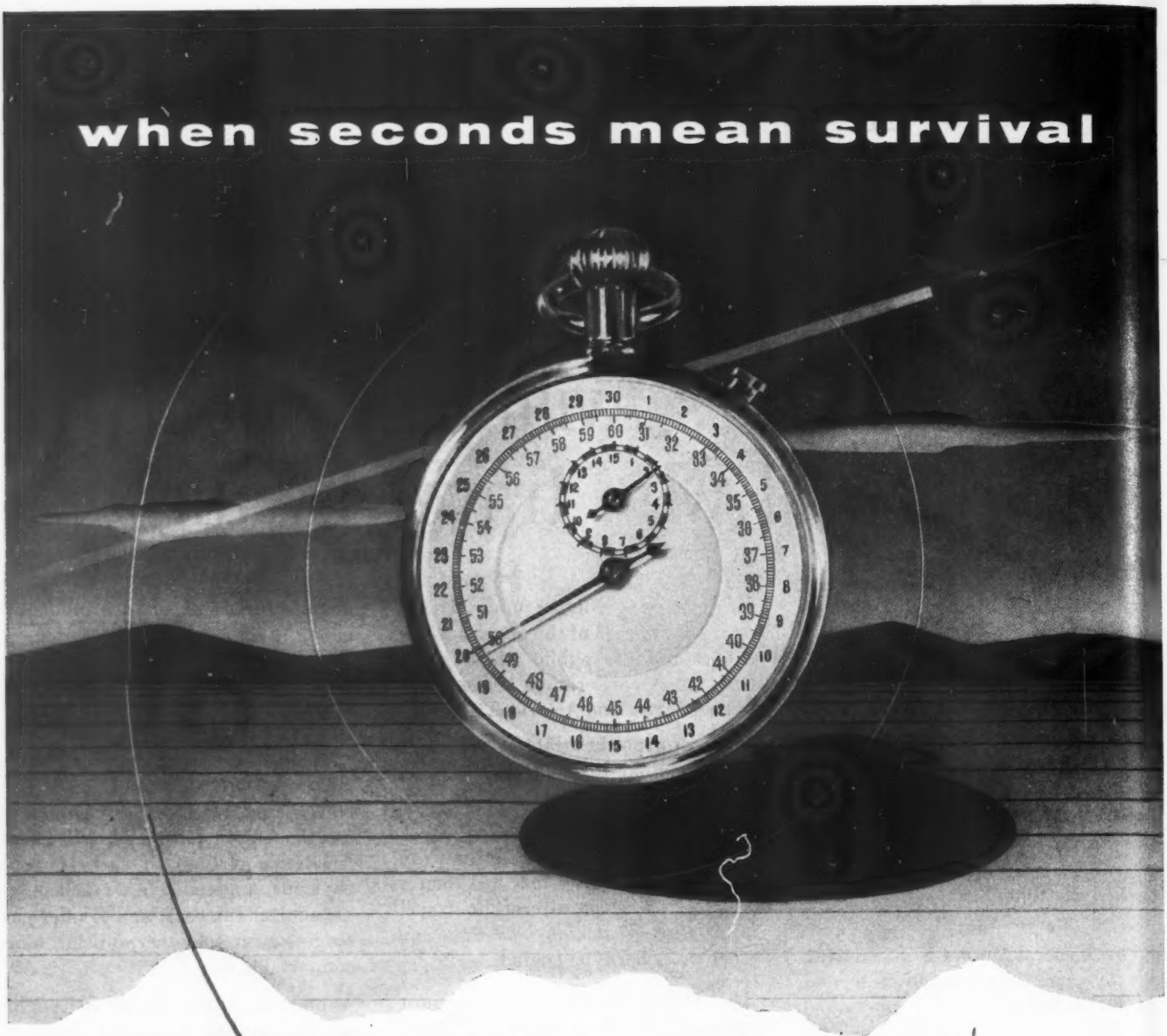
General Motors is proud that its wide experience in engine design is paying off in this important contribution to the progress of American-built-and-powered aircraft for both military and commercial service.



Model 501 Turbo-Prop Engine with matched Aeroproducts Propeller, both produced by Allison Division of General Motors.

HARLOW H. CURTICE
President,
GENERAL MOTORS CORPORATION

when seconds mean survival



Ground support equipment of unquestionable reliability is the indispensable factor for maintaining aircraft at a constant "ready" . . . and getting them airborne in the shortest possible time should the need arise. ▷ To this vital end CONSOLIDATED devotes its full resources and long experience as the established pioneer in the design, development and manufacture of GROUND SUPPORT EQUIPMENT. ▷ Typical of CONSOLIDATED'S important contributions is the versatile, highly efficient MA-1 self-propelled multi-purpose power unit. ▷ It is the ONLY GROUND SUPPORT VEHICLE which meets all the complex problems of towing, testing, servicing and starting jet aircraft . . . quickly and surely . . . even under the most difficult operational conditions. Now serving the U. S. Air Force, Navy and Marines . . . this sturdy unit is CONSOLIDATED for GREATER POWER and VERSATILITY.

THE ALL-PURPOSE MA-1 HELPS GREATLY TO SOLVE THE MANPOWER PROBLEM . . . FOR ONE SERVICEMAN TAKES THE PLACE OF FOUR

IN THE EXACTING FIELD OF GROUND SUPPORT, CONSOLIDATED HAS DEMONSTRATED ITS ABILITY TO MEET THE MOST COMPLEX DEMANDS

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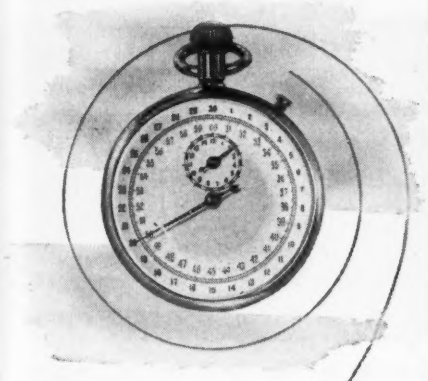

when seconds mean survival...

MODEL MA-1

GROUND SUPPORT

This compact, self-propelled, multi-purpose unit performs all requirements of towing, testing, servicing and starting for jet aircraft.

- A. C. POWER... 30 KVA, 400 cycles, 3 phase and 10 KW 1 phase, close regulated.
- D. C. POWER... 28.5 volts, up to 2250 AMP. For split or single bus start and servicing.
- COMPRESSOR... Air supply up to 3500 psi, 13.5 CFM, 1,000 cu. in. reservoir.
- TOWING... All-wheel drive Torque converter transmission—for smooth, more dependable towing.

IN ACTIVE USE WITH U.S. AIR FORCE, NAVY AND MARINE UNITS .... Other models of single and multi-purpose ground support equipment are available with any combination of AC and DC power ...high pressure air hydraulic systems and low pressure air ...refrigeration and heating.

CONSOLIDATED
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nations." The fact that there is always the possibility that certain avenues of air supply can be denied us by action of foreign governments, he said, puts a great premium "on the adaptability and flexibility of the proposed modern air logistics system." He said that "present US policies for the exchange of commercial rights in international air transport provide a reasonably good base for the healthy expansion of world air commerce." He pointed out that this was not, however, a static situation and urged a continuing fight "to break down short-sighted and destructive national and regional restrictions abroad." In line with this, Mr. Barringer continued, "we must also be careful to resist the temptations of undue and self-defeating protectionism at home." It would be tragic to see the commercial development of the concept that we are discussing today be retarded by quota systems, by divisions of traffic arrangements between countries, or by the thousand and one other restrictive devices."

That a pressing need for a modern air logistics system exists was not questioned, either by any of the speakers or by the audience. What was being done to achieve it was questioned, however, and most closely by Sen. W. Stuart Symington (D., Mo.), a former Secretary of the Air Force. Senator Symington asked General Twining, "Have you planned and are you asking enough money for that airlift you think is necessary to handle the 137-wing program?"

The Chief of Staff replied by saying that in the budget "the Air Force has a good slice of money for air transport."

Senator Symington then pressed the point that, if the Air Force had not enough transport for its own needs, it would be hard-pressed to fulfill its airlift obligations to the Army. The discussion wound up with a statement by Gen. Frank Everest that the programmed airlift "is adequate for the strategy now envisaged."

Later in the day, Lt. Gen. Williston B. Palmer, Deputy Chief of Staff of the Army for Logistics (G-4), was given an opportunity to put in a few words. He heartily endorsed the air logistics concept and pointed out that "the problems of the Army are identical with those of the Air Force. . . . I have had this Harvard study [Dr. Baker's study on air logistics] waved in my face by my boys, and pounded on my desk, and slapped."

General Palmer's words were given added emphasis by Jimmy Doolittle, when in his summation, he said, "If the Air Force doesn't furnish the air logistics required by the Army, the Army should be permitted to furnish it itself."

At a luncheon between sessions AFA Board Chairman George C. Kenney reminisced about air logistics and the lack of it in his part of World War II in the Pacific.

Also on the luncheon program was Dr. Theodore P. Wright, vice president for research of Cornell University, who discussed the impact of modern aeronautical technology on civil aviation.

To return to Moderator Doolittle's summation for a point-by-point analysis of what was said that day:

"First . . . The air logistic requirement we need is an air logistic system. It must be placed in operation in peacetime and as soon as possible.

"Second . . . The aircraft industry has the capability, the determination and the technical resources to add the new concept of air logistics to our airpower.

"Third . . . A properly organized and administered air logistics system is economically sound and will save dollars as well as time.

"Fourth . . . We require specially designed aircraft of adequate performance in sufficient number with enough range to do the job. The airlines will cooperate with the Air Force and run the common-purpose transports. The Air Force itself should run the special-purpose transports. . . . A prime deficiency is the unavailability of a suitable power plant.

"Fifth . . . Our combat forces can only be as effective as the logistics which support them. Much of our present air transport fleet is obsolete. We need new aircraft of advanced design. Some of these are coming along. We need long-range, medium-range, and short-range aircraft. We must speed up their acquisition.

"Sixth . . . Air logistics will improve our entire international posture. We must achieve aviation superiority by technical means, not by self-imposed restrictions. We need air logistics for aviation leadership. We need aviation leadership for world leadership."—END

Complete transcripts of the Air Logistics conference are being prepared by AFA headquarters, Mills Building, Washington 6, D. C. We believe they will be a substantial contribution to the air logistics literature. Price will be $1.00 for AFA members (individuals and firms affiliated as Industrial Associates).

To others, the price will be $2.00. Quantity prices will be quoted on request.—The Editors.

Colonel Hedlund and his family enjoy sightseeing trips in Turkey. Here they pause in front of Izmir's best known landmark, the statue of Ataturk, who established the Turkish Republic thirty-two years ago. Some people say he "removed the fezzes and put western hats on the people, which automatically put western ideas under the hats."

First home for the Hedlunds was two rooms and a bath in an Izmir hotel. Here Colonel Hedlund returns from work.

A hot plate brought from home helped out at the hotel. Here Mrs. Hedlund prepares breakfast for the youngsters.

AN AF FAMILY ADJUSTS TO FOREIGN DUTY

TURKEY

with all the trimmings

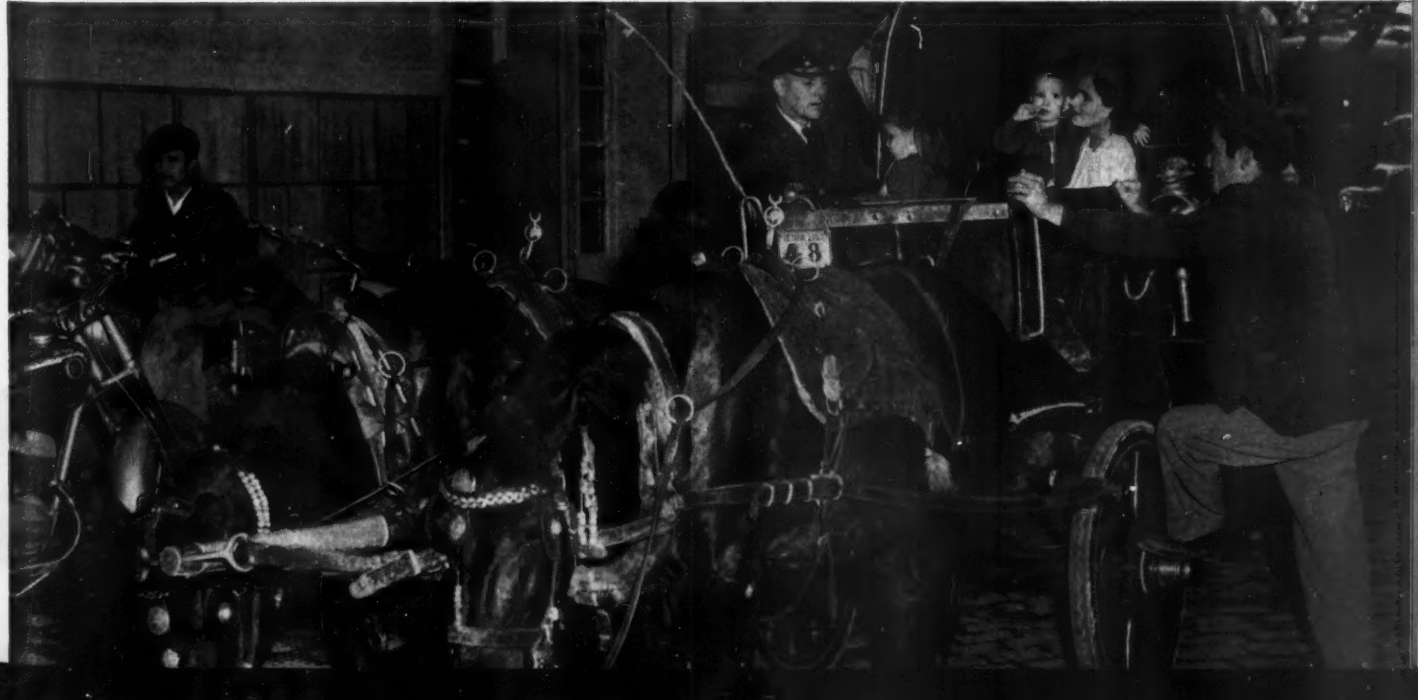
YOU don't earn a theater ribbon for overseas duty in the Turkey-Greece area—as you do in Germany or Korea. But in Izmir, Turkey—formerly Smyrna, a city of 185,000 just inland from the Aegean Sea, where Maj. Gen. Robert E. L. Eaton is doing a fine job under tough conditions, commanding the NATO Sixth Allied Tactical Air

(Continued on following page)

Living in a hotel with four active children is no joke. Mrs. Hedlund had to do the family laundry in a bathtub until they got quarters.

Fruits and vegetables from local farms are plentiful in Izmir. They are displayed in native baskets at curbside markets.

The Hedlunds climb into a two-horse carriage—still a popular taxi in Izmir. American families like to use them on shopping trips because it's easy to lift bundles in and out. And the cost of the ride is a bargain in itself.



Headquarters of the Sixth ATAF is this stone building at Serinyer. It was formerly a Turkish girls school.

Forces—some of the men stationed there feel they are fighting a battle of their own.

One Air Force family that is fairly typical of those fighting the "battle" of new languages, old customs, new money, and old plumbing, is that of Col. and Mrs. Evart W. Hedlund. He is Maintenance Chief of the Sixth ATAF. The Hedlunds, who are recent arrivals to Turkey, have four children —Janet, nine; James, eight; Gretchen, four; and little Christian, who is two.

Betty and "Ace" Hedlund discovered that just getting to Turkey is complicated—and expensive. The Hedlunds had the usual two months to get ready for their overseas move. But since Turkey is a comparatively new area for American service people, the move involved other inconveniences besides such routine ones as inoculations, passports, and living out of suitcases for weeks at a time. Added to these were the unknowns of what to take and what to expect in the strange new land.

The Hedlunds did the logical thing and wrote to acquaintances already in Turkey. But the information they got back was contradictory. A family without children doesn't need the same things as a family with several youngsters—and the needs of a family in a city of the interior are a lot different from the needs of those in a seaport city.

About the only thing the Hedlunds could be sure of before going was that it would cost a lot of money. All debts should be paid off before a family leaves. Clothing and other items have to be bought for the trip, and if the family takes the usual last-minute leave before sailing, the trip investment can run into thousands of dollars.

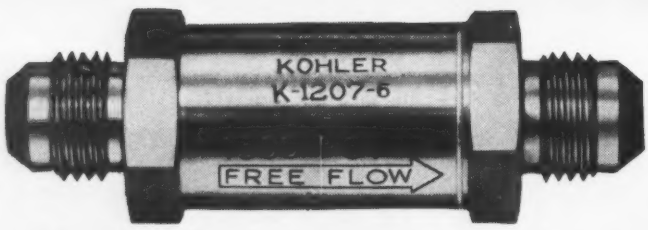
When all the arrangements were made and the family finally arrived in Turkey, they moved into one of Izmir's leading hotels for a "temporary" stay. It was two months before they were able to move into an apartment—and it was still unfinished.

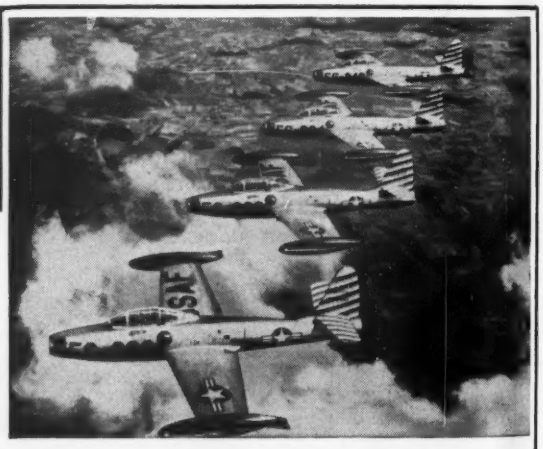
Mrs. Hedlund counts herself lucky that the children have adapted so readily to the new surroundings and are enjoying their new way of life. They attend an American school (run by the Navy, since Turkey is a joint command). There they're taught by American civilians who are hired on annual contracts.

The Hedlunds can buy fresh fruit and vegetables in the local markets, but they do most of their grocery shopping in a Navy commissary. A Ship's Store stocks American staples and a few luxuries, but the Hedlunds, like most Americans in Izmir, order most of their clothes through mail order houses in the States.

The Hedlunds now are doing fine in Turkey, in a city that is colorful and exotic, where horse-drawn carriages are still popular taxis, and where, for American servicemen and their families, sightseeing comes naturally.—END

KOHLER
PRECISION CONTROLS
Aircraft · Industrial · Automotive





USAF Thunderjets afford convincing evidence of the nation's air power. They have in their equipment Kohler Precision Controls. Kohler Co. is a leading supplier to manufacturers of jet engines, commercial, military and private aircraft.

Facilities for aluminum forging, casting, machining, anodizing are maintained in one Kohler plant—with an experienced, precision-skilled organization.

Our engineers develop valves, fittings and kindred controls to specification for volume production. Call on us for your next requirements. Write for booklet.

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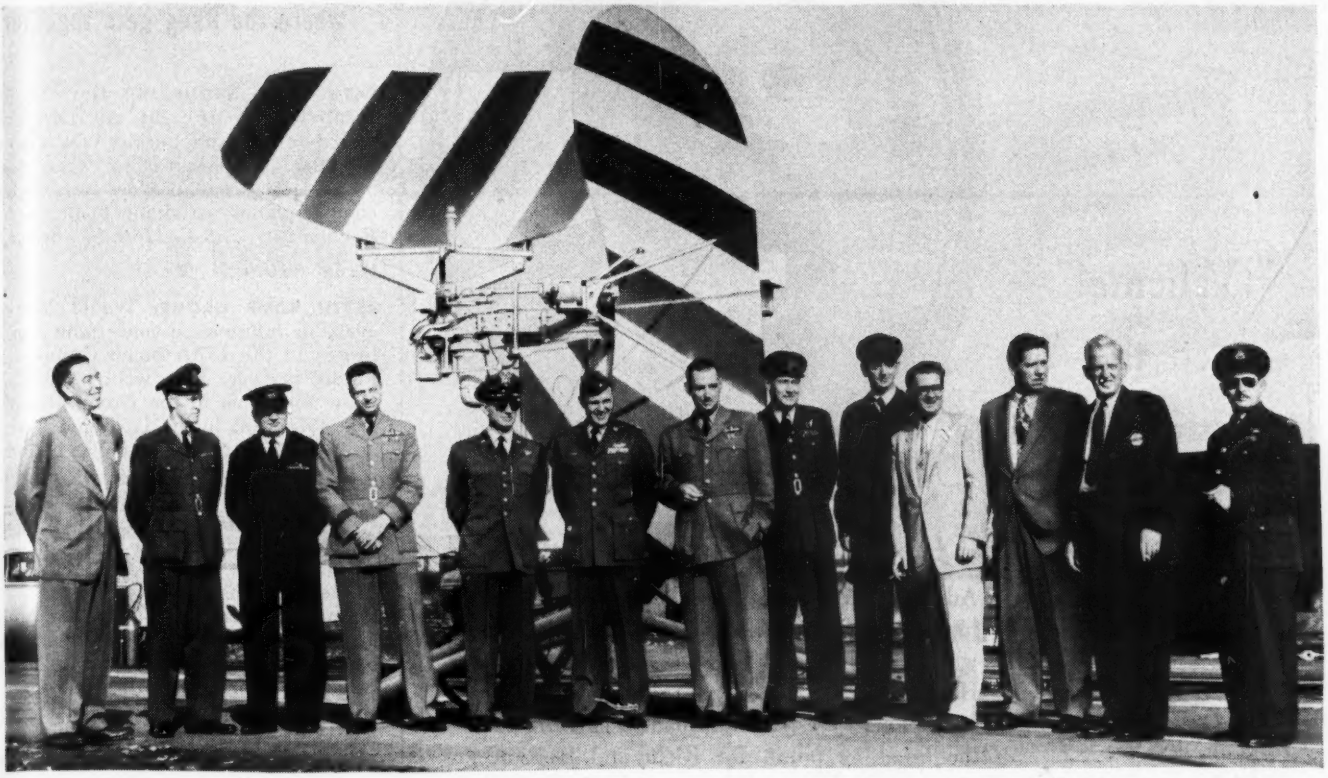
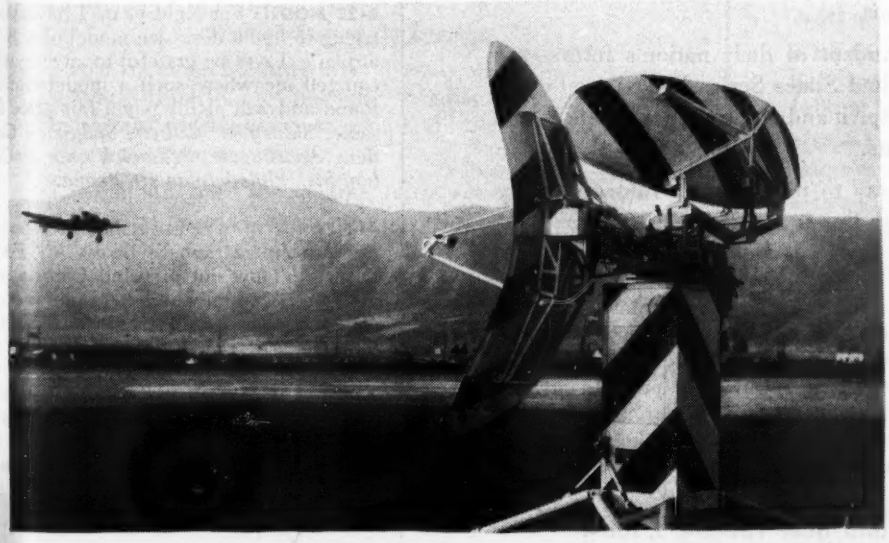
PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS • AIR-COOLED ENGINES • PRECISION CONTROLS

AVIATION EXPERTS FROM AROUND THE WORLD SEE GILFILLAN GCA QUADRADAR DEMONSTRATED



Representatives of the Royal Canadian Air Force, the Royal Australian Air Force and the United States Air Force were among the many groups attending the field demonstrations of the new Gilfillan GCA Quadradar during November-December, 1954. Also witnessing the performance of the perfected equipment during this period were authorities from the French Air Force; the Spanish Air Force; the International Civil Aviation Organization, representing 63 countries; all Commands of the United States Air Force; United States Navy BuShips, BuAer and CNO; and the Civil Aeronautics Administration.

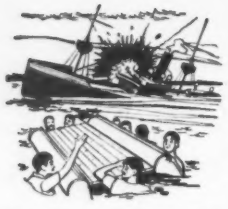


Over 200 aviation authorities attending the recent field tests agree the Gilfillan GCA Quadradar more than fulfills advance predictions of remarkable versatility. Arousing most comment was the clear demonstration that the new 4-in-1 equipment enables a single operator to handle multiple aircraft in a complex traffic pattern including emergency landings. Favorable comment also included the greatly increased definition and expansion of the precision approach display afforded by the new Beta Scan Azel scope developed by Gilfillan; instant rotation of antennas to serve desired runway remoted to operator's position; built-in circular polarization, eliminating rain and snow clutter; and, with the height-finding display, the location and checking of jet aircraft at 47,000 feet. The United States Air Force is now completing evaluation tests of the new equipment.

IN PRODUCTION. *Delivery:* 10 Months from Date of Order

GCA RADAR AND ELECTRONICS
Gilfillan
AROUND THE WORLD

"¡Valiente!" cried the Spanish admiral



Admiral Cervera and his officers cheered as his launch fished this man and seven more waterlogged American sailors out of Santiago Harbor, Cuba, on the morning of June 4, 1898. This was straining Spanish chivalry to the breaking point, for Richmond Hobson (above) and his little suicide crew had spent the previous night taking a ship into the harbor entrance under a hail of cannonade and deliberately sinking her to bottle up the Spanish fleet.

Hobson was actually an engineer, not a line officer. During that perilous night in Santiago Harbor, he led his first and only action against the enemy. But his cool-headed daring made him as much a hero of the day as Admiral Dewey. And proved again that America's most valuable product is Americans.

These Americans—proudly confident of their nation's future—are the people who stand behind United States Series E Savings Bonds. They are the people who, by their spirit and abilities, make these Bonds one of the world's finest investments.

That's why there's no better way to protect *your* future than by investing in *America's* future! Buy Bonds regularly!

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It's actually easy to save money—when you buy United States Series E Savings Bonds through the automatic Payroll Savings Plan where you work! You just sign an application at your pay office; after that your saving is done *for* you. And the Bonds you receive will pay you interest at the rate of 3% per year, compounded semiannually, for as long as 19 years and 8 months if you wish! Sign up today! Or, if you're self-employed, invest in Bonds regularly where you bank.

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RENDEZVOUS

Where the Gang gets together

94TH BOMB GROUP (H): Has the 94th Bomb Group (H), 8th Air Force, stationed in England during WW II, ever published a history? If so, where can I obtain a copy? Also, does anyone have combat photos pertaining to the Group? *Reuben Fier, 265 E. 176th St., Bronx 57, N. Y.*

457TH BOMB GROUP: Would like any available information concerning a group history of the 457th Bomb Group. If no history has ever been written I'd like to know the name of the Group Historian. The 457th was in the 1st Bomb Division at APO 557 during World War II. *Robert L. Olsen, 5367 So. 2425 W, Roy, Utah.*

FORMER MEMBERS OF THE 39TH: The 39th Bomb Sqdn., Walker AFB, N. M., is interested in contacting its former members. Those men who served in this squadron during the period 1941-1945, and are interested in keeping abreast of what's happening, should contact the following: *Adjutant, 39th Bombardment Sqdn., H, Walker Air Force Base, Roswell, N. M.*

AND FORMER MEMBERS OF THE 40TH: I am interested in contacting former members of the 40th Bombardment Sqdn., 6th Bombardment Wing, who served in the organization from December 1941 to September 1945. Please write to *Maj. Henry K. Lambert, Historical Officer, 40th Bombardment Sqdn., H, 6th Bombardment Wing, H, Walker Air Force Base, Roswell, N. M.*

B-25 MODEL: For eight years I have been trying to find a desk-size model of a B-25 airplane. I will be grateful to anyone who can tell me where such a model can be found and will gladly pay a fair price for same. *Sidney M. Gilbert, Sedgwick Gardens Apartments, Sedgwick and McCallum Sts., Philadelphia 19, Penna.*

AIR FORCE DIARY: Local book stores tell me that Jim Straubel's book "Air Force Diary," is now out of print. Can anyone give me a lead on where to obtain a copy, new or second-hand? *Richard H. Waring, 62 Bondcroft Dr., Eggertsville 21, N. Y.*

J. R. BEARD: I wish to locate J. R. Beard, former civilian instructor, Hawthorne School of Aeronautics, Orangeburg, S. C. *Bob Strobell, National Air Museum, Smithsonian Institution, Washington 25, D. C.*

To be sure your Rendezvous item appears in the April issue, we should have your request by February 15. —THE EDITORS.

A-C VOLTAGE REGULATORS

NO VACUUM TUBES

NO MOVING PARTS

Designed as "perfect partners" for Jack & Heintz a-c generators

Contributing to the increased acceptance of J&H "packaged" a-c generating systems for aircraft is a new series of voltage regulators. These units are designed to operate with J&H a-c generators rated from 10 through 120 kva, including: blast-cooled (120°C ambient), thermal lag, and environment-free oil- or vapor-cooled machines. Incorporating reactive load division circuits, the new regulators can be used in either isolated or parallel systems.

Static-Magnetic Design

These regulators feature a completely static design consisting primarily of magnetic circuits offering these important advantages over comparable carbon-pile and electronic-type regulators:

1. Eliminate need for vacuum tubes—means increased reliability, longer service life.

2. No moving parts—maintenance reduced to a minimum.

Jack & Heintz engineering personnel and manufacturing facilities are geared to undertake design and production of complete a-c systems or individual components. We invite your inquiry. Write Jack & Heintz, Inc., 17640 Broadway, Cleveland 1, Ohio. Export Department: 13 East 40th Street, New York 16, N. Y.

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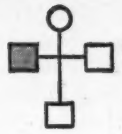
GENERAL DESIGN DATA*



- 115/200 volt, three phase or 115 volt, single phase.
- Frequency ranges of 380/420, 320/480 and 320/1000 cps. Others to suit.
- Regulate generators with power factors from .75 to 1.0.
- Hold voltage to within 2½ volts of rated, under normal operating conditions.
- Hold voltage to within 5 volts of rated, under all operating conditions.
- Return voltage to normal value within 0.18 seconds following removal of system faults or load changes.
- Operate satisfactorily over temperature ranges as wide as −55°C to +120°C.
- Envelope size and weight generally less than required by specifications.
- Mount in any position.

**All J&H a-c regulators are designed to meet the requirements of MIL-G-6099 and USAF Drawing 53D6793.*

Military specification numbers as used herein are for purposes of product identification only and do not necessarily imply specification conformity.

JACK & HEINTZ *Rotomotive* **AIRCRAFT EQUIPMENT**

technological revolution has created a discontinuity in the normal evolution of strategy. We must attempt to establish a trend toward basic compatibility between national policies and strategic concepts, taking into account the rapidly changing nature of our military capabilities. Proper implementation of a counter-force strategy will enable us to *hold* vital areas of the free world, should the Soviets strike—through frustration, miscalculation, or desperation—in spite of the deterrent capability of our strategic and tactical air-atomic forces,. If we can *hold* Western Europe and other vital areas, we will rally free people to our side by removing the present fear of "liberation," *after* Soviet occupation and liquidation.

The counter-force strategy offers some possibility of limiting wars, and hence a higher probability of preserving our way of life. The present strategy leaves no choice but total war which almost assuredly will result in mutual suicide. It is thus a contradiction of national policy—and without even the promise of military victory.

The counter-force strategy clearly distinguishes between Soviet-controlled peoples and the Communist regimes. The US professes no animosity toward Soviet-controlled peoples, although it does hold them at least partially responsible for acts of the regime. Consistent with this, the counter-force strategy does not seek to win the war largely by destroying them.

The foreign policy of the US government seeks to *reduce the capabilities* of the Soviet regime below the danger point, or to *alter its intentions* through creating situations which represent courses of action more acceptable to the Soviets and more in keeping with our objectives. This also is precisely what the counter-force strategy seeks to do in a military way—reduce Soviet capabilities (military forces and stocks) and create an acceptable alternative course of action for the Soviets (surrender on reasonable, stated terms or perish).

The counter-force strategy will make us stronger than the Soviets in tactical military power, through full exploitation of our nuclear *military sufficiency*. Even though propaganda is basically an instrument of limited potential *vis-à-vis*, the Soviet regime, the counter-force strategy would provide many opportunities for improving our poor propaganda position, as noted below. Also, the counter-force strategy could contribute markedly to our psychological and moral strength by rallying the "uncommitted" peoples to our side. Any war plan which would unavoidably lead to the annihilation of millions of people would not advance our national objective. The counter-force strategy would work to avoid hasty and automatic destruction of the Russian and US nations at the first sign of war. Furthermore, armed with the strength to destroy Soviet forces-in-being, the US could negotiate with the Soviets from a position of confidence and moral strength.

The expressed political objective—or perhaps distant hope—of a sizable segment of American leaders and citizens is controlled, universal disarmament under some form of enforceable world regulation. Resolution 32, introduced in the Senate on June 3, 1953, and signed by thirty-two Senators, reveals the importance of this segment of public opinion. Unfortunately, the world is a number of generations removed from this idealistic solution—and no practical man entertains it seriously. However, a military posture in this pattern is practical. Namely, the counter-force strategy is essentially a plan to disarm the Soviets with military force, if they should force war upon the world. Thus, again, it is a military measure entirely consistent with a basic objective of the nation.

The counter-force strategy, built on a determination to hold Western Europe and the Far East while helping to shield their cities from atomic attack, presents an opportunity to overcome some of the present apathy and fear that liberation in the next war will be too late, that the present "free" regimes will be rapidly liquidated and cities rapidly destroyed, either by Soviet bombings during conquest or by US bombings during "liberation."

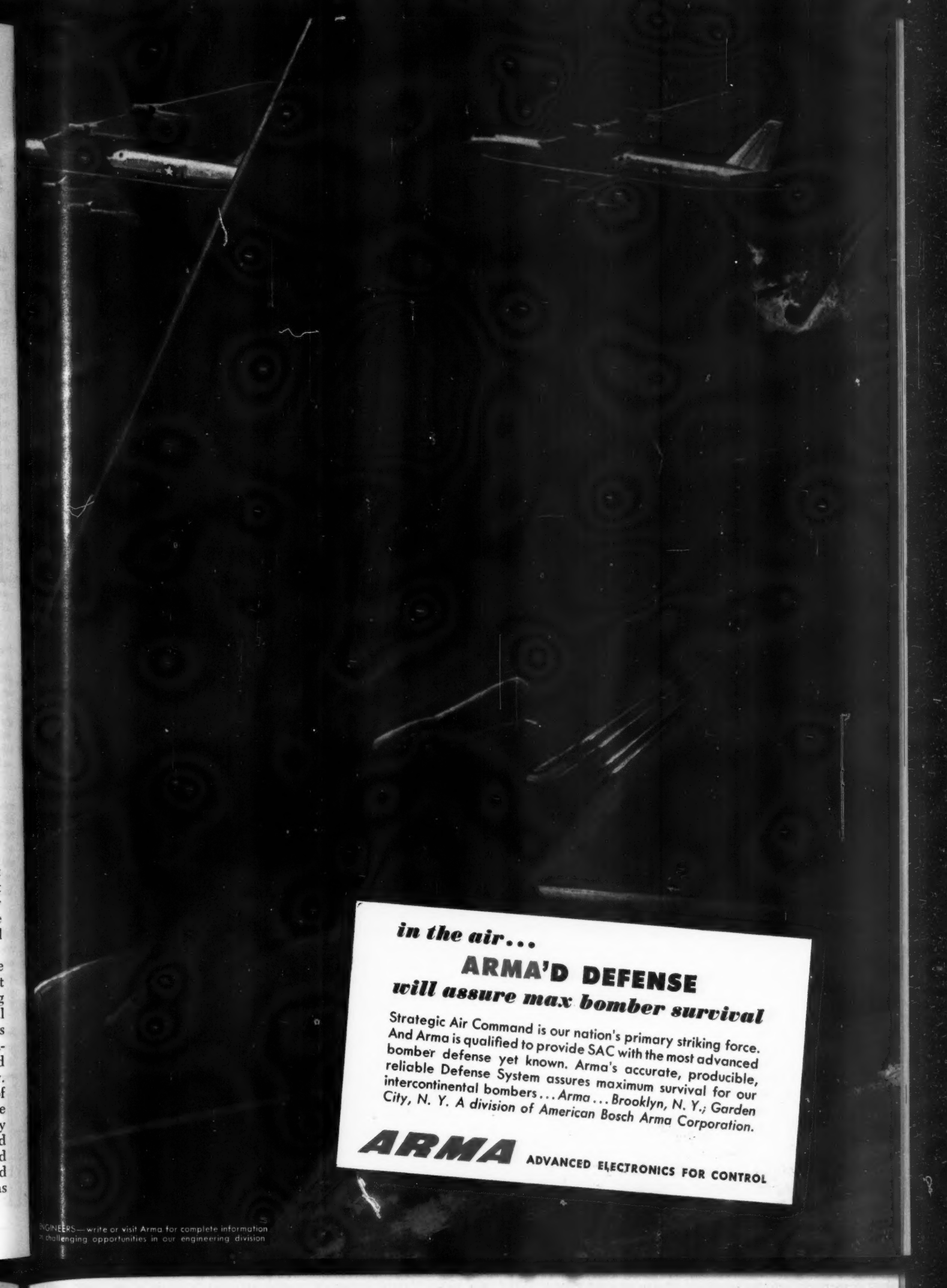
The counter-force strategy presents a badly needed opportunity for American leadership to associate itself with a higher purpose than the blind use of US military might. Propaganda-wise, and diplomatically, this circumstance can be used to attract to American leadership moralists in this country and Europe, in still neutral Asia, and among the people behind the Iron Curtain, all of whom we have yet to attract by the quality and character of our leadership.

Our present military strategy is vulnerable to certain Soviet political moves. For example, serious proposals for atomic disarmament and inspection can be advanced which do not require "ringing the Iron Curtain down with a bang." If the Soviets were suddenly to announce their acceptance of such a scheme and press forward in a major political offensive for atomic disarmament, there is a possibility they might be successful. Thus, we could be *atomically* disarmed not only with respect to strategic counter-economy attacks but also in counter-force operations. Under the counter-force strategy, the public and Congress —and world opinion—will more certainly and more readily accept the essentiality of H- and A-weapons to the free world's survival than with a strategy involving major destruction of heavily populated areas.

Korea has made it manifestly apparent that peripheral wars cannot be waged decisively by the US and its Allies under the political constraints now imposed on this type of military action. To fight a war decisively with World War II weapons, it is necessary to destroy the base of military strength; but UN military forces in Korea were restrained from doing this because of unsound apprehensions that it might lead to a major war. And for the US to wage decisively a counter-force type of war, nuclear weapons are necessary; but US forces in Korea were restrained from using nuclear weapons.

It is necessary to avoid any fixed political constraints in advance, if the US and its Allies are to be able to fight peripheral wars decisively. Lack of such a decisive capability opens the door invitingly to future Soviet thrusts, and we can look forward to a semi-permanent drain on allied military and economic strength. In this connection, the longer we wait to use the first tactical nuclear weapon, the more difficult it will become for us to do so. We must know the locations of "profitable" targets, we must accept and overcome such world censure as we may initially receive, and we must have our Allies in accord with the use of nuclear weapons *before* it is required in more critical circumstances.

In the air age, US mobile air-atomic strength can be the equivalent of Nineteenth Century British naval power. It would make possible a global Monroe Doctrine, countering Soviet military aggression against the free world, a political possibility. US troops, now stationed in forty-nine countries of the world, can be withdrawn to a major extent and stationed in this country, leaving a ring of dispersed and lightly manned standby bases around the Soviet periphery. The US can recover from its present awkward position of over-commitment of available surface forces around the world. Local national forces in Europe and Asia can carry out their share of the containment of Soviet power, backed by the shield of US air-atomic power, which is committed to destroy Communist-inspired forces of aggression and *some* of which is based in countries allied with the US as solid evidence of our commitment.—END



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ARMA'D DEFENSE

will assure max bomber survival

Strategic Air Command is our nation's primary striking force. And Arma is qualified to provide SAC with the most advanced bomber defense yet known. Arma's accurate, producible, reliable Defense System assures maximum survival for our intercontinental bombers... *Arma ... Brooklyn, N. Y.; Garden City, N. Y. A division of American Bosch Arma Corporation.*

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ENGINEERS—write or visit Arma for complete information on challenging opportunities in our engineering division

V. I. P.

VERY IMPORTANT PILOT

In him are combined the training, the scientific knowledge, the personal qualities that fit him to be master of a screaming fury that is faster than sound, faster than human senses. As he flies, electronic "crewmen" wait on him every mile and every moment. They peer through the dark, give him voice contact with far-away places, pinpoint his targets, fire his guns, tell him where he is . . . extend the power of arm and brain a thousand times. To speed his mission, bring him back surer and sooner, to enlarge his opportunities—RCA has assembled many of the world's foremost engineers and scientists. Their job is to study the pilot's needs, hear his viewpoint and search everlastingly for new and better electronic aids for him. And what they do for the pilot, they do for others in the armed forces—on land, at sea and in the air.

RCA®

GOVERNMENT DEPARTMENT
RADIO CORPORATION of AMERICA
ENGINEERING PRODUCTS DIVISION CAMDEN, N.J.

Cheyenne's Air Education Program

THE SQUADRON AND THE WYOMING WING SPONSOR A TOUR THROUGH A SAC BASE

One of the Air Force Association's youngest units has completed a program in the field of **airpower education** that gives even the more experienced groups something to shoot at.

The **Cheyenne Squadron** and the **Wyoming Wing** recently sponsored a day-long tour that took thirty distinguished business, professional, and civic leaders from Cheyenne to **Ellsworth AFB, S. D.,** for an inside look at how the Strategic Air Command operates there. The men returned home with a much clearer understanding of **SAC's role in the Air Force** and the Air Force's role in maintaining world peace.

Robert N. Maupin, AFA Wing Commander, and **Jack B. Speight, Squadron Commander,** acted as co-hosts to the group which included the young man the Squadron is sponsoring as a candidate for the first class of cadets at the new Air Force Academy.

Col. William Herblin, Ellsworth Base Commander, welcomed the group, and gave a brief outline of how SAC operates. Then **Col. Ariel W. Nielson,** Commander of the 28th Strategic Reconnaissance Wing, led a detailed briefing of an actual mission, during which each crew member described his activities and duties during the flight. Afterward, **Capt. Ralph C. Evans,** Base Information Services Officer, took the group on a tour of the entire Base.

For this program, AFA has designated the Cheyenne Squadron "Squadron of the Month" and commends the organizers and hosts for their efforts to educate the community leaders on present-day problems of the USAF.

Detroit's **Hoyt S. Vandenberg Squadron** held an **"Airpower Report"** instead of its regular meeting last month in order to give members and their guests a detailed picture of Air Force activities in the area.

An outstanding **panel of speakers** included **Maj. Gen. Richard Grussendorf,** Commander of the Tenth Air Force; **Brig. Gen. Felix Vidal,** Commander, 439th Fighter-Bomber Wing; **Brig. Gen. Edwin Tucker,** Commander, 30th Air Division; **Lt. Col. William Chapel,** Commander, Recruiting Detachment #504; **Maj. Warren Jackson,** Commander, 2652d Air Reserve Center; and **Col. Arthur Prine,** USMC, Citizen's Committee for Tri-County Airport. Dale Hornung, former member of the 439th, served as Toastmaster.

Philip Rosenberg, Squadron Commander, was in charge of arrangements for the program, and reports that the success of the event has suggested similar programs in the future. Michigan Wing Commander **Robert Emerson** and Vice President **Glenn Sanderson** attended as guests.

A detailed study of the AFA **Membership Refund Program** indicates that any AFA Squadron, with a good membership committee and renewal program, can maintain a sizeable treasury.

Under a resolution approved by the delegates to the 1951 Convention, any membership obtained by a Squadron results in a refund of $1.50 to that Squadron, plus a refund of $.50 to the Wing. This is the only way a Squadron obtains **income from AFA memberships,** since the same resolution ruled out the assessment of local dues. During the year that ended December 31, a total of 110 Squadrons and Flights, and twenty-six AFA Wings took part in the program.

The **Ak-Sar-Ben Squadron** in Omaha, with its membership campaign in high gear during the year, netted a total of 1,577 new members. This figure is tops

(Continued on following page)

SQUADRON OF THE MONTH

The Cheyenne Squadron
Cheyenne, Wyo.
CITED FOR

excellent programming in the field of airpower education. The Squadron was host to a group of civil leaders on a visit to Ellsworth AFB. A vital part of the public's acceptance of the Air Force's role in the nation's defense is a better understanding of that role.

Jack Dierssen gets award at San Francisco Squadron's dance. (See text.)

AF-ROTC Cadet George Menkick receives plaque from Morry Worshill as Colonel Greene looks on. (See text.)

Panel members for Vandenberg Squadron Airpower Report. Philip Rosenberg at far left. Maj. Gen Richard Grussendorf is in the center, under AFA banner. (See text.)

Mrs. Beulah Carr, right, discusses programs with Chicago AFA Falcons. Seated at table: Eugene Koster, Secretary, Tommy Carr, President, and Charles Guzialek, Treasurer.

ELECTRICAL ENGINEERS

or

PHYSICS GRADUATES

with experience in

RADAR *or* ELECTRONICS

or those desiring to enter these areas...

The time was never more opportune than now for becoming associated with the field of advanced electronics. Because of military emphasis this is the most rapidly growing and promising sphere of endeavor for the young electrical engineer or physicist.

Since 1948 Hughes Research and Development Laboratories have been engaged in an expanding program for design, development and manufacture of highly complex radar fire control systems for fighter and interceptor aircraft. This requires Hughes technical advisors in the field to serve companies and military agencies employing the equipment.

As one of these field engineers *you will become familiar with the entire systems* involved, including the most advanced electronic computers. With this advantage you will be ideally situated to broaden your experience and learning more quickly for future application to advanced electronics activity in either the military or the commercial field.

Positions are available in the continental United States for married and single men under 35 years of age. Overseas assignments are open to single men only.

Hughes Field Engineer H. Heaton Barker (right) discusses operation of fire control system with Royal Canadian Air Force technicians. Avro Canada CF-100 shown at right.

Relocation of applicant must not cause disruption of an urgent military project.

Scientific and Engineering Staff

HUGHES

RESEARCH AND DEVELOPMENT LABORATORIES

Culver City, Los Angeles County, California

AFA NEWS——CONTINUED

for the nation for 1954. The other nine slots remaining in the "top ten" were filled by Squadrons whose active membership programs also showed their keen interest in the growth of the Associations at the local level. **St. Louis** with 317 took second place, and **San Francisco's** 278 was third. The others, with their records, are: **Lincoln** 272, **Mohawk** (Kansas City) 219, **Twin Cities** (Minneapolis-St. Paul) 166, **Pasadena** 158, **Wright Memorial** (Dayton) 154, **Ute** (Clearfield, Utah) 144, and **San Fernando Valley** 139.

An interesting note is the fact that three of the top ten, and five of the first twenty Squadrons, are in the **California Wing,** which maintains a renewal program for all its Squadrons.

As an example of the value of this program, a quick glance at the refunds to the tenth-ranking Squadron shows that it obtained an average of $69.50 per calendar quarter during the year. This sum could go a long way toward a building fund, or just normal operating expenses.

The refund program has proved an **excellent incentive** for the AFA Squadrons to develop locally. National members who attend Squadron meetings are urged to renew through the Squadron. Even if you do not attend meetings regularly, send your National dues **through your Squadron.** The entire Association benefits by your participation.

One of Air Force Association's older Squadrons, inactive for a couple of years, is busily engaged in winning back its place on the AFA roster. The **Akron, Ohio, Squadron,** a leader in the state that held the first national AFA Convention, met in the Municipal Airport terminal in December, elected new officers, and is well on the way to activity again.

Dean Rood, 1346 Seward Ave., was elected Commander at the meeting attended by some forty members and guests. Among those present were **Mr. and Mrs. Stewart Rice.** Mrs. Rice, a National Director, was instrumental in setting up the meetings. Also present were B. E. "Shorty" Fulton, a former Director, Lt. Col. Robert Patrick, PAS at Akron University, and Gus Duda, representing AFA National Headquarters.

Members of the **Mohawk Squadron** heard **J. E. Schaefer,** Vice President of the Boeing Airplane Company and General Manager of its Wichita Division, report on the Air Force's manpower problem last month, during the Squadron's regular monthly meeting. After discussing the giant **B-52** his company manufactures, Mr. Schaefer said, "The finest equipment being produced today will fail in its mission to protect our freedom unless we have qualified personnel of high morale to operate and maintain it."

Otis Bryan, 9000 W. 67th Street, Merriam, Kansas, is Commander of the

(Continued on page 89)

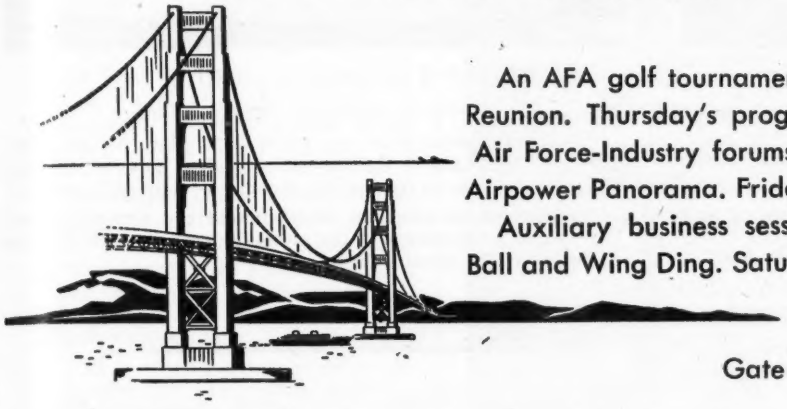
THE AIR FORCE ASSOCIATION'S

1955 Convention and Reunion

AND AIRPOWER PANORAMA

'THE SHOWCASE FOR AIRPOWER'

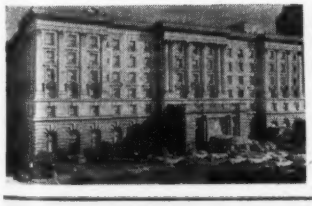
San Francisco, California ★ August 10-14



An AFA golf tournament will kick off the 1955 Convention and Reunion. Thursday's program will include AFA business sessions, Air Force-Industry forums and a luncheon, and a preview of the Airpower Panorama. Friday's events are the Airpower Symposium, Auxiliary business sessions, Reunion Cocktail Party, Airpower Ball and Wing Ding. Saturday's highlight is the Airpower Banquet. The Convention will end on Sunday with a Memorial Service in the Golden Gate Cemetery and a Brunch at the Fairmont.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

The two major Convention hotels, the Fairmont and Mark Hopkins, are located side-by-side high atop world-famous Nob Hill, only a few steps apart. The Convention business sessions will be held at the Fairmont, where the delegates and AFA leaders will stay. The Ladies Auxiliary will meet at the Mark Hopkins, with industry representatives and military officials also housed there. AFA leaders have priority on rooms at the Fairmont until April 1.



Ten San Francisco hotels have set aside rooms for the AFA Convention. Reservations must be made through the AFA HOUSING BUREAU in San Francisco—not AFA in Washington. List first- and second-choice hotels. A $10 deposit is required on each room, and will be credited to your account. Room requests for the Fairmont will be acknowledged but not confirmed until April 1 in order to assure AFA officials and delegates maximum accommodations at the headquarters hotel. Reservations for other AFA hotels will be confirmed upon receipt by the AFA HOUSING BUREAU.

AFA HOTELS AND ROOM RATES

HOTEL	SINGLE	DOUBLE	TWIN
Fairmont	$10.50-16.00	$13.50-19.00	$13.50-19.00
Mark Hopkins	10.00-14.00	13.00-20.00	13.00-20.00
Huntington			8.00-15.00
Sheraton-Palace	8.00-13.00	10.00-15.00	12.00-17.00
Sir Francis Drake	9.50-13.50	11.50-15.50	13.00-19.50
St. Francis	8.00-18.00	10.00-15.00	13.00-20.00
Chancellor	5.50	7.50	8.50
Plaza	5.00- 7.00	7.00- 8.50	8.00-10.00
Stewart	4.50- 7.00	6.00- 8.00	7.00-12.00
Whitcomb	5.00- 9.00	7.00-12.00	8.00-12.00

FILL IN, CLIP, AND MAIL TODAY!

TO: AFA Housing Bureau
Room 300, 61 Grove Street
San Francisco 2, Calif.

NAME _____

ADDRESS _____

CITY & STATE _____

HOTEL _____ _____
FIRST CHOICE SECOND CHOICE

_____ _____
TYPE ROOM DESIRED RATE

SHARING ROOM _____

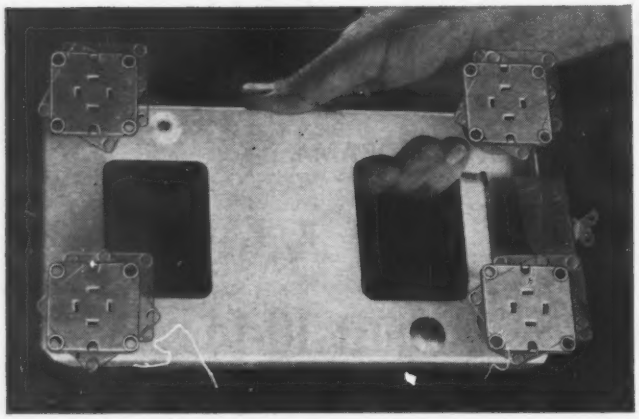
ARRIVAL DATE & HOUR _____

DEPARTURE DATE _____

( ) Room deposit of $_____ is attached.

PLAIN FACTS ABOUT VIBRATION AND SHOCK MOUNTINGS

FOR AIRBORNE ELECTRONIC EQUIPMENT

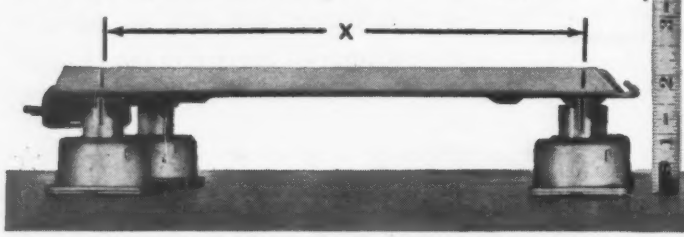


OUT-DATED UNIT MOUNT BASE

16 mounting holes and 16 bolts required.

Unit mountings may be improperly attached to the rack, and are very likely to be seriously misaligned during attachment to aircraft or missile structure.

Even minor discrepancies in spacing and attachment of unit mounts can defeat the whole purpose of the mounting base, and result in poor performance and deterioration of equipment.



Excessive height required. Unit mount bulk imposes reduced spacing (X) between support centers, resulting in impaired stability (critical in lateral direction). Greater sway space required.

Well Designed Electronic Equipment,

If Poorly Mounted,

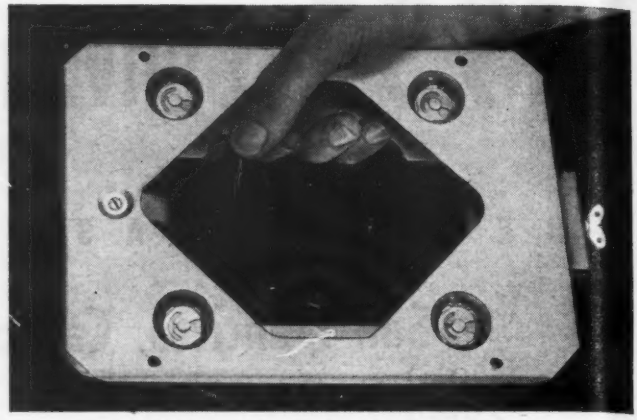
Too Often Operates Inefficiently and Unreliably

Failure also can result from use of inadequate mountings which are not engineered for the particular equipment and purpose. Conventional shock mounts or so called "isolators", reasonably effective when installed under ideal laboratory conditions, become dangerous trouble makers when installed by usual production line methods.

Attachment of a base plate to unit mounts to achieve spacing control is a makeshift arrangement resulting in excessive weight with no height reduction.

Failure also can result from obsolescent unit mounts employing internal rubber, organic or synthetic materials which deteriorate rapidly and are susceptible to temperature and environmental changes.

The importance of today's electronic equipment surely justifies the use of integrated mounting systems designed to meet specific problems rather than the unreliable application of assembled "catalogue" mounts.

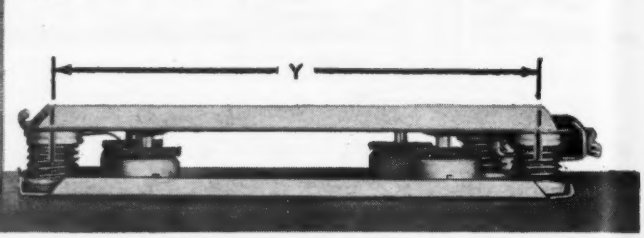


TODAY'S ENGINEERED MOUNTING SYSTEM

Only 4 mounting holes required.

Prespaced holes in a one piece base plate assure quick, accurate attachment. Relationship of all 4 holes is definitely fixed (holes spaced for interchangeability with unit mounts).

No installation errors or misalignment can occur to disturb the precise performance of the mounting system as checked and approved on acceptance tests.



Note reduction in mounting height. Important space saved. Maximum spacing (Y) of resilient elements at extreme corners provides stability. Less sway space required.

Robinson All-Metal Engineered

Mounting Systems Assure Outstanding Performance

and Reliability of Equipment

The Robinson concept of vibration and shock control is the design and application of 100% all-metal mounting systems. Engineered with careful understanding of the equipment to be protected and performance expected, Robinson mounting systems come to you completely manufactured, ready to receive the electronic equipment or instrument.

The integration of these mounting systems into the electronic equipment of aircraft and missiles results in reduction of elapsed design time and basic development cost.

Robinson Mountings utilize, as main resilient elements, metal wire cushions (MET-L-FLEX), exclusive with Robinson. This construction has been thoroughly proven by years of use in nearly all military and commercial aircraft.

Some other important characteristics of Robinson Mountings: inherent high damping, non-linear spring rate, performance unaffected by grease, oil, water, dust, extreme temperatures or environmental changes.

USE OF ROBINSON ENGINEERED MOUNTING SYSTEMS results in:

A. Reliable and uniform performance in every installation under all types of environmental conditions.

B. Reduced cost through "de"ruggedization of equipment — substantial reduction of size and weight is possible by simplified and compact design.

C. Simplified installation — only four attachment holes required—pre-spaced to save time and assure accuracy.

For full information about this new concept *of vibration and shock control, write or wire today.*

ROBINSON AVIATION INC.

TETERBORO NEW JERSEY

Vibration Control Engineers

West Coast Engineering Office:
3006 Wilshire Boulevard, Santa Monica, California

Squadron. Under his leadership, educational meetings such as this most recent one have become commonplace for the Squadron.

More than 400 people turned out for the **San Francisco Squadron's** annual **Airpower Ball,** sponsored this year in honor of the outstanding AF-ROTC Cadets of the four area colleges and universities.

In addition to the four Cadets honored, plaque awards were also presented to two members of the **Chamber of Commerce** in recognition of their outstanding aviation interest.

The dance was held in the Peacock Court of the Mark Hopkins Hotel, one of the two Headquarters Hotels for the 1955 National Convention.

Michel Pisani, Far West Regional Vice President, presented awards to the following Cadets: **Clair Lloyd,** San Francisco State; **William Black,** Stanford; **Ron Simpson,** San Jose State; **Robert Rubin,** University of California. **Clay Bernard,** San Francisco Chamber of Commerce, and **Jack Dierssen,** Junior Chamber, were also honored.

CROSS COUNTRY . . . The **St. Louis Squadron** beer and pretzel party was held in the Anheuser-Busch Brewery December 6. **August A. Busch, Jr.,** the host, is a member of AFA . . . The **Cuyahoga Founders Squadron** and the **Cleveland Aviation Club** co-sponsored a dinner commemorating the 51st Anniversary of the first flight by the Wright Brothers . . . The **Worcester, Mass., Squadron** held its annual Christmas party in the AFA Clubhouse. Wayne Gibbs was Chairman . . . The **Olmsted, Penna., Squadron** planned a tour of the Fairchild Aircraft and Engine Corp. plant in Hagerstown, Md., as a feature of the January 19 meeting. Bob Cox was in charge of arrangements . . . The **Elgin, Ill., Flight** sponsored a tour of O'Hare AFB for members of Scout Troop 16 recently. Louis Molner, Squadron member and Assistant Scoutmaster, supervised the event . . . **J. B. Edwards,** a Douglas Aircraft Company engineer, spoke on "Helicopters and Their Uses" at the last **Santa Monica Squadron** meeting . . . The **Twin Cities Squadron** Commander, Bill Kohlan, represented AFA at Veterans Day services in Minneapolis . . . **AF-ROTC Cadet George Menkick,** Commander of the Arnold Air Society's **Kitty Hawk Squadron, Illinois Institute of Technology,** has been awarded AFA's Silver Medal as the outstanding Advanced Cadet on campus. AFA Director Morry Worshill made the presentation . . . **Wing Convention** dates and sites have been announced by three Wings: **California** will hold its meeting April 30 to May 1, in Fresno; **Ohio's** will be May 7 and 8 in Toledo; **New York's** will be May 21 in New York City. Details on these and others will be announced later. Plan now to attend your Wing's Convention and participate in Squadron and Wing activities.—END

BLC
Are you one of a select group of aerodynamicists sincerely interested in boundary layer control projects? The Aircraft Division of Fairchild offers a genuine creative opportunity to such men.
Fairchild has been intensively engaged in boundary layer control studies since 1951. In addition to building up its own staff of engineers specializing in boundary layer control, the company has contracts in effect with Mississippi State University and leading authorities in boundary layer control at Princeton and the University of Wichita. Recently, Fairchild appropriated more than a million dollars of company funds for an accelerated program of boundary layer control.
Gracious country living only minutes away from urban Baltimore or Washington . . . paid pension plan . . . an excellent salary with paid vacations . . . an ideal working environment . . . generous health, hospitalization and life insurance . . . and the many other benefits of a progressive company add to the pleasure of working with Fairchild.
You'll be investing wisely in a secure future if you take time today to write to Walter Tydon, Chief Engineer, outlining your qualifications. Your correspondence will be kept in complete confidence, of course.
BOUNDARY LAYER CONTROL
ENGINE AND AIRPLANE CORPORATION
FAIRCHILD
Aircraft Division
HAGERSTOWN, MARYLAND

FS-460
LAST SHOW

An AIR FORCE Magazine fiction feature by David F. McCallister

in a war fought at tree-top level, an F-84 pilot learned what makes a man a hero

AFTER the chaplain had said his few solemn words, the fighter jockeys began filing out of the briefing room. Mark Allison lingered for one last look at the names on the briefing board—Allison, Davis, Wynoski, O'Brien, Danielsen, Esposito, LeFevre. Looked like the roll call at the United Nations. This was Allison's hundredth mission—the last show. One more. Then, like so many happy warriors before him had done, he would surreptitiously slip into the briefing room, scribble FIGMO on the blackboard, sign his name under it, then race like crazy to the other side of the field with orders that put him on the four-engined MATS dreamboat bound for San Francisco.

Linda, with the golden hair, would be there to meet him. The kids, too . . . Mark Jr., little Linda, Debby, and Stevey Boy. No more flak, no more MIGs, no more missions, and no more nights of rolling and tossing, sweating out that Commie bullet with his name on it.

He put his hand into his pants pocket and felt a piece of cold rectangular metal. As his fingers slid across the letters imprinted on it, Mark gritted his teeth. He didn't have to look to know that they spelled *Kriegsgefangener Stalag VII A*. Those letters were imprinted on his brain with Jerry barbed wire. He thought about that last show he flew out of England. Was it only seven years ago? Seemed more like twenty or thirty, or just a bad dream. He shook his head to chase away that old nightmare, then forced a dry chuckle and mumbled to himself, "Well, at least they let us win that one."

"C'mon, Ace, you're holding up the war!" freckled-faced Sid Davis called from the doorway.

"There'll be other wars, son, so don't rush off in the heat of the day," Mark replied, then began walking toward the door, his mind five thousand miles away in the land where all the bogies are little friends.

Sid patted him on the back as they walked toward the pilots' locker room.

"Well, Ace, this is the one you've been looking for. And you lucked up on a real good one too. Got yourself a milk run for the last show. Sure hope I'm just as lucky. All we have to do is boing ten miles over the lines, plunk two napalm bombs and eight rockets into some hard-headed Commies, then boing right back across the lines before they can unlimber their flak. If my Yid luck holds out we won't see any of those neon golf balls; no MIGS; none of those black clouds with the cast-iron centers."

Sid shuddered at the thought of the heavy flak, then looked up at the older fly guy who had led him around by the hand for almost a year.

"Ace," he said seriously, "this young tiger ain't happy when that heavy stuff starts coming up."

"Heavy flak shakes up the best of 'em, Sid," Mark replied grimly.

Sid smiled as he said cockily, "You don't have to worry about MIGs on this show. You've got Sid Davis, the hottest wingman in Korea, making certain that Mrs. Allison's hotpipe artist keeps her and all those little crumb-crunchers in groceries for years to come."

Mark grinned down at the young redhead. "And don't forget that silver mezuzah your father sent me is still hanging right next to my St. Christopher medal."

Sid beamed. "You've got it made, Ace. Stick with us Davises and we'll not only make you famous . . . but rich! Ace, I can see it now. Full-page ads in all the Frisco papers. 'Capt. Mark Allison, fighter ace of two wars, announces the opening of the West Coast's most exclusive men's shop, carrying a full line of those famous Davis Dapper Dan gahments . . . shipped direct from New Yawk's world-renowned gahment district.'"

"Via Sid's Supersonic Airlines?"

Sid's freckled face sobered as he gesticulated to impress the skeptical captain. "Look, Ace, I'm serious. Back in New York my old man is a wheel. He's got loot. He'll set you up in a good garment business any place you name. We gotta branch out. We gotta keep expanding. We gotta keep bringing in the loot. When I get home I'll really get you in straight with the old man. After I finish telling him how you brought me through this fiasco without a scratch, he'll love you like a son. And it won't be long before I'm back there either. Fifteen more missions and I'm going to bid this Suwon Sun, Sand and Surf Club one great big *sayonara*. Two months after that I'm shedding this shade eighty-four garb forever and a day. I'll clue you, Ace. These fighting wars are for the heroes. And even though young Sidney Davis does have a bit of the tiger in him, he ain't no hero. I'm just another necktie salesman from old Battery D who wants to go back home and write his memoirs."

• • •

Mark slid the locker door open and lifted out his dark blue coveralls. Hanging his battlejacket on a hook, he slipped into the coveralls, then reached for his anti-G suit. The blue and gold Eighth Air Force shoulder patch on his battlejacket caught his eye. He had flown Mustangs out of England as a fighter escort pilot during World War II and he thought, yep, Sid, this low-level ground support racket is for the heroes. It's not like the last big hate, when we fought upstairs where it was clean. This is a dirty, bloody kind of war; slugging it out at tree-top level with guns we can't see; screeching up narrow valleys and crashing into cables; pouring rockets and bombs into bunkers filled with Commies; getting the hell shot out of us on every mission; fighting in the filth like a mud-slogging infantryman. You're right, Sid, this stuff is for the heroes.

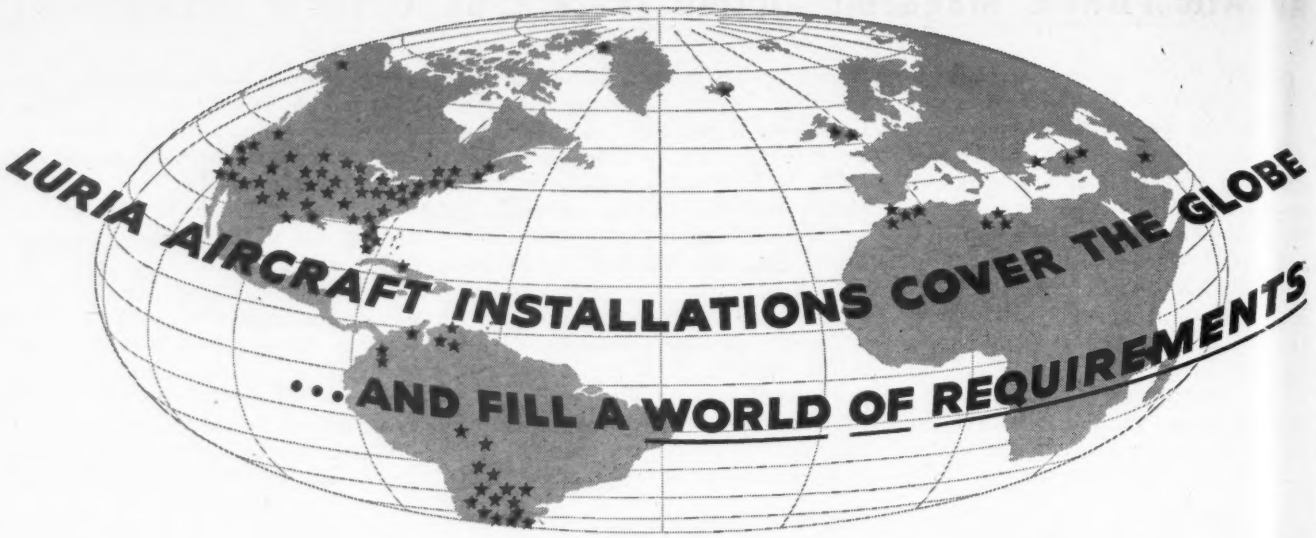
Mark felt good when his loaded Thunderjet mushed into the air at the eighty-five hundred foot marker of that nine thousand feet of narrow macadam. And he had every right to feel good because it was his last show and he was leading it.

The sixteen Thunderjets bored north, with black plumes of oily smoke pouring from their tailpipes. Mark felt his aircraft wallow a little. Glancing to his right, he saw Sid's tip tank only a foot away from the trailing edge of his aileron. Motioning Sid to move out, he watched Sid assume his correct position and hold the T-jet seemingly motionless in the sky. Sid raised his left hand and formed an OK signal with his thumb and index finger. Mark grinned beneath his mask and looked across the ninety feet of space. Only a patch of freckled skin and a pair of eyes protruded above the big green oxygen mask and below the scarlet crash helmet.

"You're a hero and don't know it, Sid," he mumbled.

Passing over the bomb line, he peered through the thick glass of the windscreen and located the target approximately six miles at twelve o'clock

(Continued on page 93)



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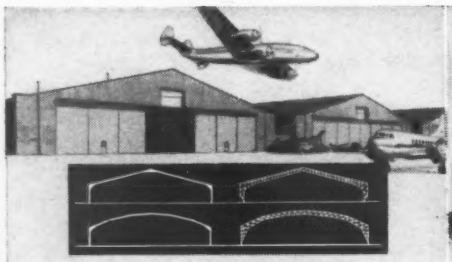
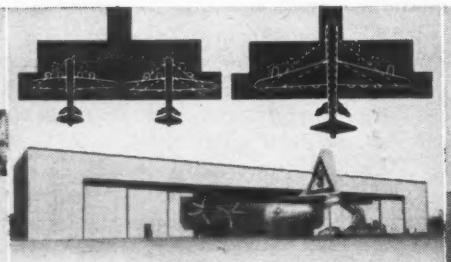
Why do Luria steel structures fill the widest variety of airport needs? Because the Luria System of Standardization provides the *adaptability*, *flexibility*—yes, and even the *permanence*—that formerly could be found only in *custom-built* units. *And this is achieved without sacrificing the speed and economies of standardization.*

During the last ten years, nearly 500 Luria aircraft installations have been made. The United States Air Force has standardized on 14 Luria designs . . . and uses a wide variety of other Luria hangars. At Lockheed Aircraft, Luria structures cover over a million square feet. Among the hundreds of other Luria installations are hangars and buildings for the airfields of Turkey, Iran and Argentina . . . for many air lines including Pan American, United, American, Eastern, Northwest and Capital . . . and for many airports including New York International, Detroit Wayne Major, Springfield, Illinois and Westchester County, New York.

A PARTIAL SHOWING OF STRUCTURES FOR EVERY TYPE OF MILITARY AND COMMERCIAL AVIATION



STANDARDIZED HANGARS — both girder and truss types for commercial and military aircraft.



ALL-PURPOSE "WING" HANGAR accommodates one heavy aircraft or two medium aircraft.

DOUBLE CANTILEVER hangar for double-apron air traffic. Accommodates aircraft of all sizes.

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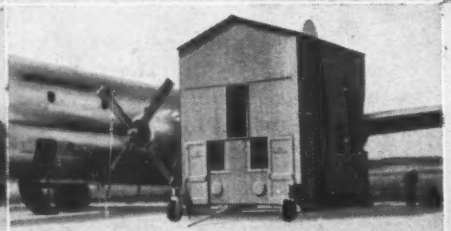

STANDARDIZED MAINTENANCE SHELTER for heavy aircraft. Portable, enclosed, weather-proof.

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low. Six Red tanks were supposed to be hidden in a grove of trees on the south side of the valley. Signaling the squadron to assume an attack formation, he dived toward the trees. Passing over the top of a tall hill with just a few feet to spare, he felt the convective air currents jar the aircraft. Out of the corner of his eye he could see the air condensing into white sheets as it struck the leading edge of the wing knifing through the air at five hundred knots. The roar of the wind and the high-pitched whine of the gas turbine engine filled the cockpit with a sound he loved. As the grove of trees began to disappear under the nose of the T-jet, he pressed the red button atop the control stick and the napalm bombs dropped free. The jet nosed up abruptly. Easing in some forward trim to take the weight off the controls, he reefed the pipe into a tight climbing turn to the left so he could observe his strikes. At four thousand feet he looked down and saw the entire grove of trees flaming brilliantly.

"Ah, boy," he muttered to himself happily. "Just like the book."

Sid's voice came through his earphones. "Hey, Ace, that was the wrong grove. I spotted those tanks three hundred yards farther up the valley."

Mark looked at the next thicket. There they were! Six armored hulks trying to hide behind some flimsy branches. As he whipped the T-jet into a tight left turn, the G forces shoved his body into the seat and a numbness seeped through him as gravity pulled the blood from his head. Mark eased off the back pressure and the numbness disappeared instantly. As he dived he put the white pipper of light in the gunsight on the nearest tank. At three hundred yards he pressed the button and four rockets raced toward the metal monster. The thicket disappeared beneath the nose and he reefed back the stick to keep from flying into the top branches. The T-jet shuddered in a high-speed stall as he zoomed upward off the target. Flashes of red streaked past the leading edge of his right wing, then he felt a dull, stomach-quaking clump! He was hit!

The high-pitched whine died to a whisper, and the red fire-warning light on the panel flashed on. He swallowed hard as he yanked the throttle to the stopcock position. Before he could press the mike button Sid's voice blared through his earphones. "You're hit, Ace! You're on fire! Bail out! Bail out!"

The frantic words electrified him into action. He knew the gas turbine would blow in about thirty seconds and the aircraft would fall apart before he could belly in onto the dirt road running through the heart of the valley. There was no choice . . . he had to bail out!

He glanced at the altimeter. Eight hundred feet of terror firmament between me and terra firma, he thought. It was almost suicide to even try bailing out. "Bail, Ace, bail!" Sid's voice shrieked. "Don't wait! Bail out! Now!"

Oily blue smoke flooded the cockpit. He couldn't see the instrument panel. Instinctively he placed his feet in the seat stirrups, then pulled up the left armrest that blew off the canopy. The three-hundred-knot wind buffeted his head against the armor-plated headrest as he pulled up the right armrest and squeezed the trigger . . . POW! The explosive charge shot him up and over the tail of the T-jet.

The earth spun dizzily as the seat whirled around and around. A cacophony of bombs, rockets, and jet exhausts reverberated in his ears, clouding his brain with a nightmarish picture. Around and around, sky and earth, blue and brown, orange flashes, silver wings, red clay, the world turned upside down in a mad surrealistic fantasy!

He clawed frantically at the safety belt release. A hard kick and the seat was gone. Groping for the D-ring he yanked the chrome handle and tore it from the harness. Behind it streamed two feet of wire. The earth was coming up faster and faster! He held his breath. Pop! The white and orange canopy blossomed overhead. The leg straps tore into the flesh of his groin. The metal buckle on the chest strap slapped him on the chin, laying the flesh open. Then came the bone-crushing jar as his feet hit the ground and his chin struck his knees. He rolled over in an unconscious heap.

Mark came back to life in an unreal world of wailing, screeching engines and earth-jarring explosions. The staccato bark of the fifty-caliber machine guns rattled through the valley as the T-jets swooped down and blasted the green-clad figures that poured across the frozen rice paddies to get at the prostrate form lying on the cold, clay road. Rifles cracked and the clay splintered as the bullets splattered against the frozen earth, then ricocheted into the hills behind him. An excruciating pain shot up his right leg. The ankle was turned like no ankle should be—broken. The blue above turned to purple, then black, and it became quiet for him again.

Minutes passed and the shaking of the earth had ceased when he opened his eyes. But the whine of the gas turbines, the howl of the exhausts, and the bark of the lethal fifties persisted. He glanced at his watch—0915. He'd been on the ground sixteen minutes. His rockets were fired at 0858—that he knew. He counted the T-jets racing madly up and down the valley. Thirteen remained. Two had gone back to guide the Air Rescue hoptycopter. The hills behind him were

(Continued on following page)

About the author

If you were searching for an adjective that would best describe David F. McCallister, you would be forced to settle on peripatetic. Dave moves around so much that it's difficult to know where he's been, where he is, or where he's going. This is the result of his many vocations and avocations. He runs one of the largest catering businesses on the East Coast; manufactures and sells a variety of soups (he always closes his letters "Soupersonically yours"); demonstrates his "Soup Cutter"—a navigational aid for jet pilots; commands the 142d Fighter Squadron of the Delaware ANG; and turns out novels, articles, and motion-picture scripts with the regularity of a printing press. Since he began writing a few years ago, McSnapper, as he's known to us, has delivered himself of one million words. His secret: carry a portable typewriter with you at all times. "Last Show" marks McSnapper's debut in AIR FORCE Magazine. He got the idea for the story from the good luck charm that, like his typewriter, is always with him. We expect our peripatetic fighter pilot's second million words will include more for us.—The Editors.

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LAST SHOW — CONTINUED

cold, barren, and lifeless. Nothing stirred. All the Commies were on the south side of the valley.

It's 0920 and they've got enough fuel for twenty more minutes. More fifties began to sputter. Another 841 out of ammo. That made it eleven. The two remaining had enough for one or possibly two more passes. The jets circled like fish hawks.

Green-clad figures raced across the frozen paddies. A T-jet streaked down to cut them off. Flashes of flame spurted from nose and wings, then spluttered and were silent . . . number twelve out of ammo.

Mark reached for the .45 in the shoulder holster. A Red tank rumbled down the road from the east. A lone T-jet streaked toward the lumbering steel monster, spitting flame and lead. Diamonds of white light danced along the green armor plate as the API ammo bounced innocuously off the tough steel shell. The tank rumbled onward. The guns spluttered, faltered, then the echo of a staccato bark rippled up the valley. Mark watched the thirteenth T-jet join the big circle overhead.

From above, thirteen pairs of eyes peered down at the helpless figure rolling down the embankment into the ditch to escape the metal monster that ground ominously toward him. Looking up Mark watched them circle, then he reached inside his shirt and pulled out the silver chain that hung around his neck. Dangling in his hand, the silver mezuzah, with the Star of David on its silver shaft, sparkled in the morning sunlight. Next to it the copper medal of St. Christopher glowed red.

Closing his eyes Mark turned his face up to the sky and offered a last quick prayer, then looked to the south where he heard the faint thrashing and beating of a whirlybird engine. Like a fantastic insect it clawed its way through the blue sky ten miles away. It was too late. Linda, Linda!

But from the west came the shrill shriek of a gas turbine. Turning his head, Mark saw a flash of silver streaking up the red clay road, its shiny belly almost touching the clay. As the jet wailed past he saw the large scarlet letters blazoned across the nose—"Sid's Subsonic Sweetheart." An ear-splitting, earth-shaking explosion rent the air as the T-jet crashed headlong into the tank, flowering into a thousand pieces of flaming debris.

0945 . . . the Thunderjets departed. Only the crackle of the burning tank treads and the clackety-clack of the approaching eggbeater disturbed the quiet that had descended upon the valley. It was one helluva way to end the show.

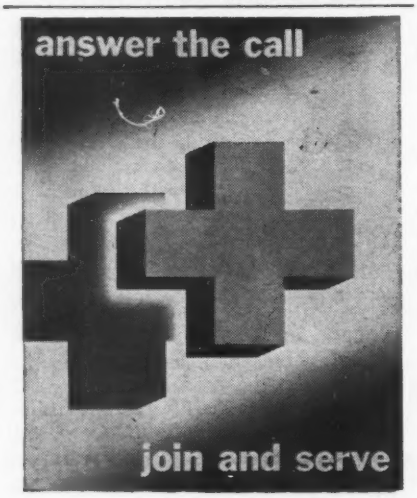
• • •

From his hospital bed at Johnny Air Force Base, Mark watched the condensation sparkle as the little drops raced down the windowpane. It was getting on to February and the ankle was almost strong enough to walk on. Soon he'd be catching that dreamboat. But even the thought of Linda and the kids could not crack a smile from his lips.

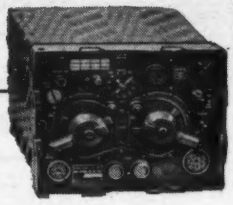
A nurse in a starched white uniform bustled into the room, a clipboard in her hand. She caught the sadness in Mark's gaze. "Buck up, Captain. Your orders will be coming through in a few days and you'll be going home like a hero."

Mark's gaze dropped to his chest where sunbeams were dancing across the Star of David that hung on the silver chain. He looked at the nurse. "Lieutenant, you've got me all wrong. I'm just another necktie salesman going home to write his memoirs." He peered grimly out the window and said, "The heroes never go home."

—END



The case of the RT-66...

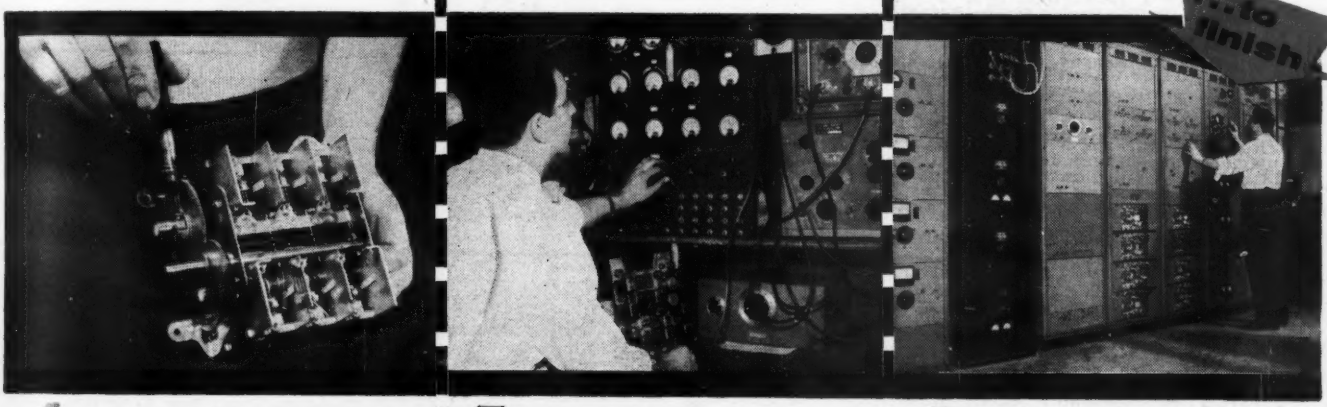


From raw material to finished product under one roof!

1 Bar stock, sheet metal, wire and other raw material for the Receiver-Transmitter RT-66/GRC is cut to size for cases, chassis, gears and other Lewyt-made components.

2 Jig-borers in Lewyt's large Tool and Die Department turn out precision tools to guarantee top quality parts when RT-66 is mass-produced.

3 Special Lewyt-designed machines cut costs and speed up production. This one automatically drilled and tapped over a million holes in RT-66 condenser parts.



4 Lewyt's engineering versatility enables it to make over 75% of the components for the RT-66 – variable capacitors, coils, chokes, transformers and most of the mechanical parts.

5 As chassis take shape, Lewyt's quality control system goes to work. Here a sample sub-assembly is checked to insure conformance with process quality level.

6 Central control system delivers crystal controlled frequencies and frequency response curves to 28 RT-66 test positions to assure uniform performance of final unit.

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